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HUMAN SERUM AS A BLOOD SUBSTITUTE

IN THE TREATMENT OF HEMORRHAGE AND SHOCK

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The World War afforded an unusual opportunity to study and treat traumatic hemorrhage and shock. This resulted in a great impetus to the use of fluids intravenously for restoring normal fluid balance, combating hemorrhage and resultant shock, and aiding the treatment of wound septicemias and toxemias. At present infusions are also used widely for anemias, burns and dehydration due to various causes. Blood has been the fluid of choice in practically all conditions. However, on reflection it appears that blood may be replaced quite adequately in some circumstances. Thus, in severe infections serum (other than specific serum) may be used instead of blood if there is no associated secondary anemia. Traumatic and operative shock [1] and burns [2] are characterized by extensive plasma loss and hemoconcentration, resulting in a diminished volume and more viscid blood. It would seem that these conditions would be best relieved by serum or saline solution, which not only reestablish normal blood volume but also reconstitute normal plasma cell ratios. It is still believed that whole blood cannot be replaced in the infusion treatment for anemia, because of the need for red blood cells. It is likewise thought that severe hemorrhage, in which all the constituents of the blood are lost, can be treated only by the restoration of whole blood. Although whole blood is undeniably the ideal restorative fluid, the question may well be raised if it is the only fluid that can be used and if there may not be an adequate substitute which offers advantages over blood.

It may be stated briefly and categorically at this point that the loss of erythrocytes in severe hemorrhage is seldom a vital factor. The sudden and marked diminution in circulating blood volume is of grave and serious significance because this oligemia leads to rapid development of secondary shock as a result of anoxemia. All this is discussed more fully later. It is mentioned at this time only to bring out the important factors in severe hemorrhage, i. e. oligemia and ensuing secondary shock, and the vital necessity for prompt volume replacement to prevent or overcome the dangerous effects of hemorrhage. It is quite apparent that delay in instituting treatment is a serious matter, for the degree of shock increases and may become profound and irreversible.

All blood transfusions must be preceded by certain laboratory procedures: (1) typing the patient, (2) typing a proper donor, (3) careful testing for compatibility and (4) performing Kahn or similar tests. These procedures are essential in avoiding transfusion reactions and even when rapidly performed consume one or more hours, a delay which may prove fatal in an acute emergency in which the patient needs life restoring fluids immediately. Other fluids, such as dextrose and saline, may be given in the interim, but such interval measures are often ineffective. Hence a serious drawback in the use of blood transfusion as an emergency measure is a certain unavoidable delay of varying duration.[3]

It was this delay, in addition to other considerations such as frequent difficulty in securing blood for indigent patients, that led to the development and the use of "stored" or "preserved" blood. In an emergency the use of stored blood is an excellent measure, although evidence is accumulating that stored blood is inferior to fresh blood, especially if the storage has been for more than seventy-two hours.[4] However, even with the use of stored blood there still remains unavoidable delay because of the necessity for typing the patient's blood, performing compatibility tests and filtering the stored blood. In addition, it has been recommended that such blood be administered slowly to decrease unfavorable reactions. For these reasons stored blood does not provide a solution for those emergencies in which prompt blood volume restoration is a vital necessity.

Reactions following blood transfusions are still relatively frequent.[5] The most serious type of reactions is those due to hemagglutination or hemolysis.[6] It is clear that although blood transfusion is a valuable measure and often life saving there are two handicaps that restrict its usefulness, i. e. unavoidable delay before

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1. Cannon, W. B.; Fraser, John, and Hooper, A. N.: Some Alterations in the Distribution and Character of the Blood in Shock and Hemorrhage, J. A. M. A. **70**: 526 (Feb. 23) 1918.

2. Harkins, H. N.: Experimental Burns: The Rate of Fluid Shift and Its Relation to the Onset of Shock in Severe Burns, Arch. Surg. **31**: 71 (July) 1935.

3. Hoitink, A. W. J. H.: Treatment of Acute Fatal Hemorrhage by Injection of Artificial Blood Substitutes, Surg., Gynec. & Obst. **61**: 613 (Nov.) 1935.

4. Kolmer, J. A.: Preserved Citrated Blood "Banks" in Relation to Transfusion in Treatment of Disease with Special Reference to Immunologic Aspects, Am. J. M. Sc. **197**: 442 (April) 1939.

5. Lundy, J. S.; Touhy, E. B., and Adams, R. C.: Data on Blood Transfusion in 1936, Proc. Staff Meet., Mayo Clin. **12**: 225 (April 14) 1937. Levine and Katzin.[6]

6. Levine, Philip, and Katzin, E. M.: A Survey of Blood Transfusion in America, J. A. M. A. **110**: 1243 (April 16) 1938.

administration and reactions, both due primarily to the corpuscular elements of the blood.

The need for a good blood substitute is quite apparent and has been the subject of much investigation. The ideal substitute should be a fluid which is readily available, is stable over long periods of time, remains in the circulation and is devoid of reactions or ill effects.

Crystalloid solutions have played the most important role to date as blood substitutes. They are readily available, innocuous, economical and easily prepared. However, they are frequently ineffective because under certain conditions they leave the circulation. It was this fact which led to the use of colloidal solutions, such as acacia. Acacia is readily available and remains in the circulation, but its administration is accompanied by reactions and deleterious effects which militate against its use.[7]

The use of serum or plasma infusions for combating the effects of hemorrhage, considered as far back as 1918,[8] has again been proposed in recent publications.[9] Serum can be prepared for immediate use and large amounts of pooled serum can be administered without adverse reactions.[10] This study was therefore undertaken to determine whether whole blood could not be replaced effectively by serum and how the latter compared with various crystalloid infusions in the treatment of hemorrhage and resultant shock. The dog was used because its physiologic behavior is similar to that of man in these conditions. Dog plasma forms fibrin clots or "veils" and becomes very cloudy. It was difficult to remove this material, for even after filtration there was a tendency for reformation of the fibrin veil. These fibrin particles and veils resembled the growth from bacterial contamination and required repeated sterility tests. Dog serum instead of plasma was employed, thereby avoiding these difficulties.

EXPERIMENTS ON ACUTE HEMORRHAGE

Experiments were performed on anesthetized dogs (pentobarbital sodium) weighing from 13 to 22 Kg., in which blood pressure was recorded in the usual way. A femoral artery was prepared for bleeding and a femoral vein for infusions. After a control blood pressure had been recorded, the animal was bled rapidly until its blood pressure fell to shock level (systolic pressure of 40-60 mm. of mercury). The blood pressure was maintained at shock level for periods varying from ten to twenty minutes before an infusion of either saline solution or dog serum was given. The amount of fluid administered varied from one fourth to several times the amount of blood removed.

Eight such experiments were done, and all of them demonstrated superiority of blood serum over saline solution as an infusion medium following hemorrhage and shock in dogs. The results are best presented by means of protocols on two typical experiments:

EXPERIMENT 3.—*Immediate reinfusion.* A male dog weighing 21 Kg. was repeatedly bled and given immediate reinfusions until a total of 1,250 cc. of blood had been removed and 1,450 cc. of saline solution had been administered. The blood pressure was never restored to a normal level (reduced by 30 mm. of mercury) although shock was effectively overcome. The subsequent administration of 200 cc. of serum elevated the blood pressure to its original height (from 110 to 140 mm. of mercury).

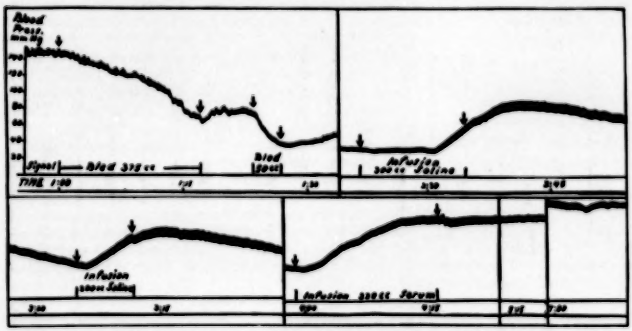

Fig. 1 (experiment 7).—Moderate and transient blood pressure elevation following saline infusion in contrast to sustained and marked elevation following serum infusion.

EXPERIMENT 7.—*Delayed infusion.* A male dog weighing 14 Kg., whose blood pressure at 1 p. m. was 146 mm. of mercury, had 425 cc. of blood removed rapidly, the pressure dropping to 40 mm.; at 1:50 the blood pressure was 60 but by 2:30 had fallen to 35 mm. Two hundred cc. of saline solution was then given and the blood pressure rose to 95 but thirty-seven minutes later had dropped to 40. At 3:07 another 200 cc. of saline solution was infused, elevating the blood pressure to 80, but by 4 o'clock the blood pressure had again fallen to 40 mm. The animal was then given 220 cc. of serum and the pressure rose to 110-120 mm. and remained at this level until the termination of the experiment at 7:10 p. m. (fig. 1).

These experiments demonstrate that immediate infusion with saline solution following hemorrhage produces a moderate degree of recovery, which however is less marked than that following serum infusion. Delay in administering fluids, on the other hand, causes a loss of effectiveness of saline solution, the influence of which on blood pressure is only temporary, in contrast to the sustained effect of serum. Experiment 7 (fig. 1) demonstrates clearly this difference between serum and saline solution when a state of shock has been present for some time. The blood vessels apparently did not retain the crystalloid solution (saline), thereby nullifying the beneficial effects of volume replacement, whereas the colloidal solution (serum) was retained and maintained a normal blood pressure. These results fail to confirm Penfield's [11] experience.

7. Studdiford, W. E.: Severe and Fatal Reactions Following the Intravenous Use of Gum Acacia Glucose Infusions, Surg., Gynec. & Obst. **64**: 772 (April) 1937. Hall, W. K.: Effects of Intravenous Injections of Acacia on Certain Functions of the Liver, Proc. Soc. Exper. Biol. & Med. **38**: 46 (Feb.) 1938.

8. Rous, Peyton, and Wilson, G. W.: Fluid Substitutes for Transfusion After Hemorrhage, J. A. M. A. **70**: 219 (Jan. 26) 1918.

9. Kallius, H. U.: Experiments Concerning the Effects of Serum in Blood Transfusions, Deutsche Ztschr. f. Chir. **212**: 289, 1929. Bond, D. D., and Wright, D. G.: Treatment of Hemorrhage and Traumatic Shock by the Intravenous Use of Lyophile Serum, Ann. Surg. **107**: 500 (April) 1938.

10. Levinson, S. O., and Cronheim, A.: Serum Inhibition of Hemagglutination and Its Significance in Transfusion of Blood and Serum, to be published.

11. Penfield, W. G.: The Treatment of Severe and Progressive Hemorrhage by Intravenous Injections, Am. J. Physiol. **48**: 121 (Feb.) 1919.

HEMORRHAGE AND INFUSION IN UNANESTHETIZED DOGS

Experimental Procedures. — The procedures are described in detail here because they were used in all further experiments. A considerable section of the right carotid artery was freed and the right jugular vein exposed aseptically under light ether anesthesia. Wide glass cannulas were inserted in both vessels. Three hours was then permitted to elapse to allow the effects of anesthesia to wear off. At the onset of each experiment pulse, respiration and temperature were recorded; blood pressure determinations were made by means of a Tycos anaeroid gage with a small T tube and rubber tubing connected to the carotid cannula on one side and to a citrate pressure bottle on the other. A determination of the circulating blood volume was made by the vital red dye method of Keith, Rowntree and Geraghty as described by Peters and Van Slyke;[12] arterial blood was drawn from the cannulated carotid artery for red blood cell count and hemoglobin as well as for determination of carbon dioxide, oxygen, chlorides, nonprotein nitrogen and plasma proteins. The animal was then bled until it was reduced to a state of shock as judged by blood pressure readings as well as by its clinical condition.

The animal was given infusions through the jugular vein of fluids at body temperature. At the end of each experiment the cannulas were removed, the wounds were dressed and the animal was returned to its cage. In some experiments chemical studies, blood count, hemoglobin and blood volume determinations were done on the following day or subsequently.

RESULTS

Massive Hemorrhage and Delayed Infusion.—Our aim in these experiments was to produce a state of post-hemorrhage shock by a single massive hemorrhage,[13] leave the animal in this condition for two hours so that increased capillary permeability and secondary shock might develop, and then transfuse with various fluids. It was found that a number of animals recovered to a varying degree in the two hour period, while others remained in shock, and therefore transfusions with saline solution, serum or blood gave varying and inconsistent results. It is worth noting that those dogs having the highest blood pressures at the conclusion of the experiment had received either blood or serum. Another interesting feature was that the blood proteins remained at normal levels following serum infusions, whereas they showed considerable diminution after saline infusion. In one experiment with saline solution the serum protein level fell to 3.6 per cent per hundred grams, a dangerously low level.

Graded Bleedings.—The method of massive hemorrhage and delayed infusion therapy having failed to produce a consistent and maintained shock simulating the condition frequently encountered in man, we resorted to another approach. A state of shock was induced gradually by repeated periodic bleeding and delayed subsequent infusions. During this process the blood reserves were so depleted that they played a less significant role in recovery and survival. The animals were prepared as described. Observations including pulse rate, respiratory rate, temperature, blood pressure, hematocrit, blood volume, red blood cell count, hemoglobin and chemical blood studies (nonprotein nitrogen, carbon dioxide, oxygen protein) were done at the beginning and at various intervals during the course of the experiments. Thirty per cent of the calculated circulating blood volume[14] was then removed at the rate of 25 cc. per minute. The animal was put aside for half an hour and then given an infusion, allowed to recover for another half hour and bled again. This procedure was repeated periodically until the animal had been bled of 80 per cent[15] of the calculated circulating volume in successive stages of 30, 20, 20 and 10 per cent, and one half hour subsequent to each bleeding the dog was given an infusion of a quantity of fluid approximately equal to the blood previously removed. The amount of fluid infused did not replace the blood withdrawn for chemical studies, red counts and necessary washing out of cannulas (from 150 to 235 cc.)

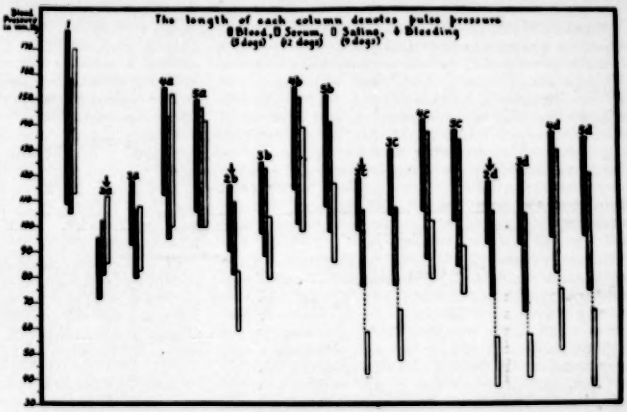

Fig. 2.—Maintenance of good blood pressure levels following blood and serum infusion in contrast to failing blood pressure following saline infusion: 1. Control before experiment. 2a. Immediately following first removal of blood, 30 per cent. 3a. One-half hour after first bleeding. 4a. Immediately after first infusion. 5a. One-half hour after first infusion. 2b. Immediately following second bleeding, 20 per cent. 3b. One-half hour after second bleeding. 4b. Immediately after second infusion. 5b. One-half hour after second infusion. 2c. Immediately after third bleeding, 20 per cent. 3c. One-half hour after third bleeding. 4c. Immediately after third infusion. 5c. One-half hour after third infusion. 2d. Immediately after fourth bleeding, 10 per cent. 3d. One-half hour after fourth bleeding. 4d. Immediately after fourth infusion. 5d. One-half hour after fourth infusion. The blood pressures in the saline group do not include antemortem readings.

12. Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry, Baltimore, Williams & Wilkins Company **2**:706, 1932.

13. The blood removed varied from 2.5 to 4.8 per cent (average 4.0 per cent) of body weight.

14. The literature contains values for blood volume of dogs which vary from 7.5 to 11 per cent of the body weight (Gibson, J. G., 2d; Keeley, J. L., and Pijoan, Michel: The Blood Volume of Normal Dogs, Am. J. Physiol. **101**:800 [March] 1932). We arbitrarily chose the figure of 7.5 per cent of body weight as representing the circulating blood volume of the dog.

15. At each successive bleeding fewer red cells were lost, because of dilution from previous infusion. Actual cell volume removed therefore amounted not to 80 per cent but to about 66⅔ per cent of the initial circulating amount.

RESULTS

Twenty-eight experiments were performed. Five dogs were reinfused with their own citrated whole blood removed at preceding bleedings. Twelve animals were reinfused with serum from other dogs. Nine dogs were given saline infusions, four receiving physiologic solution of sodium chloride and five receiving Hartmann's solution, with or without 2 per cent dextrose. Two control experiments were performed in which no restorative fluids were given.[16]

TABLE 1.—*Mortality Following Hemorrhage and Infusion*

Infusion	Number of Experiments	Mortality After First Bleeding	Mortality After Second Bleeding	Mortality After Third Bleeding	Mortality After Fourth Bleeding	Mortality Total	Mortality Per Cent
Control (untreated)	2	0	1	1	..	2	100
Saline solution	4	0	0	1	3	4	100
Lactate (Hartmann's solution)	5	0	1	2	2	5	100
Serum	12	0	0	0	0	0	0
Blood	5	0	0	0	0	0	0

Mortality (table 1).—We realized soon that this procedure of graded bleedings was the proper approach to study differences in the effects of the infusion fluids. All dogs that were bled four times, with removal of 80 per cent (30, 20, 20 and 10 per cent) of the calculated circulating blood volume and were given infusions either of whole blood or of blood serum, survived. Dogs given infusions either of saline solution or of Hartmann's solution died during the course of the experiment; one died after the second bleeding (50 per cent), three after the third bleeding (70 per cent), and the remaining five died from ten minutes to two and one-half hours after the second bleeding.

Blood Pressure (fig. 2).—In the beginning of the experiments the control blood pressures of all animals were approximately the same (1, fig. 2); they fell to a varying degree after the first bleeding (2a). A particularly low figure was obtained in a splenectomized dog. Marked variation in response to hemorrhage is to be expected on the basis of varying degrees of vasoconstriction, blood reserves and general condition of the animals. One-half hour after the first bleeding (3a) only seven of the dogs were suffering from various degrees of shock, their blood pressures ranging from 60/35 to 95/65 mm. of mercury. The first infusion was then given and the blood pressure rose to normal levels (4a) in all but four instances. In these, serum had been used and was followed by a "reaction" in which the blood pressure remained the same or was depressed to shock levels. This "reaction" was transient, occurred only after the first infusion of serum, and subsequent infusions of the same lot of serum gave no further unfavorable effect.

All the blood pressures were approximately normal half an hour after the first infusion (5a). From this point on, however, unmistakable differences began to appear between the different groups of animals. The most noticeable drop in blood pressure occurred in the saline animals following the second bleeding (2b). At this time the average blood pressure of the saline infused animals was 84/60, of the serum infused animals 111/83 and of the blood infused animals 118/92. After the half-hour post bleeding interval (3b) the average blood pressures of the saline dogs was 101/81, of the serum dogs 125/90 and of the blood dogs 127/99. Figure 2 gives a graphic picture of the course of blood pressure as the experiments progressed. In the saline dogs the succeeding bleedings (2c and 2d) were followed by increasingly greater blood pressure drops and correspondingly less marked beneficial effects from the saline infusion. There was also a distinct tendency for the blood pressure to fall during the half hour post infusion recovery phase, an indication that the crystalloid infusion was of only temporary benefit. On the other hand, the serum and whole blood animals maintained good blood pressures throughout the course of the experiment, falling less during bleeding and showing good restorative response following infusion, indicating that serum and blood were retained in the circulation. At the end of the experiments the average blood pressures in those saline animals still alive was at shock levels, whereas the blood pressures of the blood and serum dogs, although reduced from their original levels, were quite satisfactory.

CHEMICAL DETERMINATIONS

Carbon Dioxide (table 2).—The control values for alkali reserve as reflected in arterial blood carbon dioxide was essentially the same in all animals and showed a uniform decrease after the first bleeding, reflecting the effect of the hemorrhage. The succeeding determinations showed a return to normal in the blood and serum dogs. In the five saline dogs that died before the end of the experiments a severe degree of acidosis was found terminally with carbon dioxide values as low as 4.5 volumes per cent. These observations led us to employ lactate saline solution (Hartmann) as an infusion fluid which might combat acidosis because of its buffering capacity. Table 2 shows that no such effect was obtained.

Blood Proteins (table 3).—The serum dogs showed practically no change in blood proteins. The blood dogs showed a definite drop in blood protein. An extreme fall was observed in the saline group, in which the plasma protein values fell from an average of 6.5 per cent to 3.8 per cent, a loss of 42 per cent of the initial plasma protein. This decrease is significant, for it indicates that the lost protein was not replaced adequately from the tissue fluids. When the plasma protein falls below a critical level, even normal capillaries become permeable to their contents.[17] Such an effect from lowered plasma proteins is much more marked in an animal which is acidotic and in shock.

TABLE 2.—*Changes in Arterial Carbon Dioxide Content Following Hemorrhage and Infusion*

Infusion Fluid	Arterial Carbon Dioxide Content Before First Bleeding	Before Second Bleeding	Before Third Bleeding	Before Fourth Bleeding
Blood	36.9	31.3	30.3	34.3
Serum	39.0	33.7	28.1	28.5
Saline solution	39.4	33.7	32.5	22.3
Lactate (Hartmann's solution)	37.3	32.1	32.5	23.7
Controls (untreated)	38.4	25.1		

Nonprotein Nitrogen.—There was no significant change in the nonprotein nitrogen values in the blood or serum groups, but there was a relative elevation in the saline dogs concomitant with their condition of shock.

Blood Volume.—Plasma volume showed little change in the blood and serum groups. Cell volumes dropped slightly in the blood group, markedly in the serum

16. For the sake of brevity, dogs infused with blood, serum and saline solution respectively are designated as "blood," "serum" and "saline" dogs or groups.

17. Leiter, Louis: Nephrosis, Medicine **10**: 135 (May) 1931.

group equivalent to the cells removed. The blood volume determinations in the saline group were unsatisfactory, owing to the fact that they were found to be inaccurate and unreliable in the presence of a state of shock.[18]

Red Blood Cell Count, Hemoglobin and Hematocrit.—The blood dogs showed a slight decrease at the end of the experiment. Both serum and saline dogs showed very marked falls, the change being more pronounced in the former group, in which it averaged about 50 per cent.

Respiration and Pulse.—Respiration was variable and influenced by unimportant external factors. The final pulse rates in the blood dogs were close to the original rates. In the serum dogs the pulse rate was somewhat increased, but the saline dogs showed the most consistent and most marked acceleration.

TABLE 3.—*Changes in Plasma Protein Content Following Hemorrhage and Infusion*

Infusion Fluid	Plasma Protein Content Before		
	First Bleeding	Third Bleeding	Fourth Bleeding
Blood	6.2	5.4	5.3
Serum	6.6	6.4	6.4
Saline solution and lactate	6.5	4.2	3.8

SUMMARY OF EFFECT OF TRANSFUSION FLUIDS

Saline Solution.—The animals derived only partial, temporary and progressively diminishing restorative effects from this fluid. There were progressive fall in blood pressure, increasing acidosis, diminishing plasma protein, diminishing red blood cells and a progressive state of shock terminating in death in all instances.

Serum.—The benefits from this fluid were strikingly good and permanent. Blood pressures were well maintained, alkali reserve and plasma proteins remained normal, shock was effectively combated, and all animals survived. The red blood cells and the hemoglobin were markedly diminished, but no animals showed any serious effects from this anemia and their general condition was surprisingly good at the end of the experiment.

Blood.—This fluid was the best but aside from cell replacement was in most respects not superior to serum. The animals in this group all survived and showed only minor blood pressure decreases and weakness from the prolonged experiment.

LIMITS OF BLEEDING AND INFUSION

We were interested in determining to what extent animals could be bled and reinfused with serum and blood beyond the 80 per cent blood removal and replacement described. Two "whole blood" experiments were performed. In the first animal 140 per cent [18] of the circulating blood volume was removed and reinfused. The final blood pressure was 125/115, compared with an initial pressure of 170/120; the alkali reserve, blood volume and hemoglobin remained relatively constant. The other animal was subjected to 150 per cent blood removal and replacement in stages; the final blood pressure was 125/95, while the original blood pressure had been 170/110. Alkali reserve, blood volume, and so on showed insignificant changes. Both dogs remained in good condition, although somewhat exhausted by the prolonged experiment.

While it is not remarkable that a dog can be repeatedly bled and reinfused with his own blood with complete recovery, the extent to which a dog can be bled when reinfused with blood serum is rather astonishing. Two dogs were bled and infused as usual until 80 per cent of the blood had been removed; then 10 per cent bleedings and reinfusions were continued until 110 per cent and 140 per cent [18] of the blood had been removed before these animals died. Both animals were in fair condition until the last 10 per cent bleeding, following which the blood pressure fell markedly and the animals died before the next infusion period. The hemoglobin was reduced from 118 and 116 per cent to 25 and 24 per cent respectively and the arterial oxygen content fell proportionally; acidosis did not develop until terminally.

Similarly two other dogs were bled and given infusions of serum until 120 per cent [18] of the calculated total blood volume had been removed. In one dog the blood pressure dropped with successive bleedings but rose following the serum infusions. At the end of the experiment the blood pressure was 95/50 and the animal was in fair condition. Hemoglobin fell from 138 per cent to 34 per cent and the pulse rate increased from 88 to 188 beats per minute. Blood carbon dioxide after the 110 per cent bleeding was 37.6 volumes per cent. The other dog had a blood pressure of 145/90 after the fourth infusion and the hemoglobin was reduced from 119 per cent to 63 per cent. The animal withstood four additional bleedings, at the conclusion of which the blood pressure was 115/60 and the hemoglobin 42 per cent. A total of 1,200 cc. of blood had been removed and replaced by an equal quantity of serum. Actually the loss of blood was somewhat higher, approximating a total of more than 1,400 cc. At the start of the experiment the animal's circulating blood volume as measured was 1,057 cc., with plasma volume of 624 cc. and a cell mass of 433 cc. Before the fourth bleeding, after 70 per cent removal of blood, although the plasma volume had remained constant, the cell mass had fallen to 160 cc., about 37 per cent of the original. The circulating cell mass at the conclusion of the experiment was much lower than the latter figure. Yet after such extensive removal of blood and depletion of red blood cells the dog was relatively strong and well, not acidotic and apparently little disturbed by his extreme anemia, for the pulse had increased only from 96 to 142 per minute. This experiment illustrates not only the restorative effect of serum but also the exceptional vitality of some dogs.

REACTIONS

The nature of the serum "reaction" mentioned, which was encountered in about 25 per cent of serum infusions, was of unusual character. The only constant sign of reaction was a moderate and transient drop of blood pressure, from which the animals always recovered spontaneously within the one half hour post infusion period. Further infusions of the same serum into the same animal never brought a repetition of this effect. Occasionally there were additional symptoms, such as chilling, growling, vomiting and defecation, which likewise were of transitory nature and did not recur on subsequent serum infusions. The same pool of serum would cause reactions in one animal and not in others. Compatibilities were performed in all instances, and only compatible serum was used. We were unable to establish a common causative factor, and this subject is now being further investigated with reference to sensitivity and other factors.

18. Neuwelt, Frank: Blood Volume in Shock, Am. J. Physiol. (Proc.) 126: 393, 1939.

COMMENT

Major attention in the past has been focused on the loss and need for restoration of red blood cells in acute hemorrhage. Rous and Turner,[19] for instance, discarded the plasma and used the red blood cells suspended in Locke's solution. Experimental work and clinical experience by others and ourselves show, however, that a marked and rapid depletion of red blood cells is without fatal effect provided an adequate circulating blood volume and oxygen carrying capacity are maintained. The fatality accompanying or following acute hemorrhage is not due to loss of red cells per se but essentially to volume depletion, resultant inadequate circulation, tissue anoxemia, increased capillary permeability and shock (see Moon [20] for literature).

Acute severe hemorrhage produces oligemia, resultant lowered blood pressure and primary shock. The outcome of this primary shock depends on the rate and amount of hemorrhage and the availability of the blood reserves. Blood reserves vary in different animals, depending on their physical condition, and are considerable in the healthy animal. These reserves are mobilized promptly and fairly rapidly when needed; nevertheless, blood may be lost so much faster than mobilization can occur that this lag may prove fatal.[21] When bleeding occurs slowly, adequate reserves will be mobilized and shock prevented.[22]

These physiologic facts are well borne out in clinical experience in man. For example, a patient may have a slowly bleeding peptic ulcer but does not show evidence of shock as long as the blood reserves can compensate for the loss. However, sudden massive hemorrhage from ulcer, ectopic pregnancy or trauma results in oligemia and primary shock. The prime need in this event is to restore fluids and to maintain sufficient circulating blood volume. The actual composition of the fluid is of secondary importance. Hoitink [5] has shown that the immediate infusion of large quantities of 0.9 per cent sodium chloride solution was as beneficial in saving the lives of dogs as any other blood substitute which he used, even though there was a profound diluting effect of the saline, reducing the concentration of red blood cells, plasma proteins and the colloid osmotic pressure.

If primary shock and oligemia are not relieved rapidly, tissue anoxemia, increased capillary permeability and acidosis, i. e. secondary shock, follow. Hoitink [5] avoided this by immediate restorative measures. Secondary shock following hemorrhage presents an entirely different therapeutic problem than primary shock. Our experience has convinced us that in secondary shock saline solution is not the life saving fluid that it proves to be in primary shock because capillary permeability is increased. The experiments on anesthetized dogs demonstrated clearly that in secondary shock saline solution produced only moderate and transient elevation of blood pressure. Serum, on the other hand, produced a marked and sustained elevation of the blood pressure, indicating that the infused serum was retained in the circulation (fig. 1).

The experiments with graded hemorrhage and delayed infusion provided a method for demonstrating the striking difference between the value of crystalloid solutions and serum. The initial bleeding and the delay of reinfusion caused a slightly increased capillary permeability, permitting escape of the infused crystalloid solution. As successive bleedings were performed, capillary permeability in the saline infused animals increased progressively, with greater loss of the infused saline or dextrose solution and progressively diminishing circulating blood volume. In the serum dogs the capillary permeability was not sufficient to allow for escape of the infused serum, which remained in the circulation and maintained adequate plasma volume. Furthermore, while serum contains practically all plasma proteins, crystalloid solutions caused a dilution of plasma proteins with resultant lowering of the colloid osmotic pressure of the blood and transudation of saline solution into the tissues.[22a]

Although whole blood is the best restorative fluid in massive hemorrhage, its use always entails an unavoidable delay which may be fatal. There is also the possibility of reactions despite the most scrupulous care. Furthermore, owing to the difficulty in obtaining donors, it is not customary to give quantities of blood larger than 1,000 cc. (except with the use of stored blood) despite the fact that the degree of hemorrhage may be sufficiently severe to warrant from two to three times this quantity.

Our experiments have demonstrated that serum overcomes all the effects of hemorrhage in dogs except the loss of red blood cells (this loss, as we have seen, may be quite extensive without serious effects). There are many practical advantages in the use of serum as a blood substitute. It may be prepared,[23] tested and stored in large quantities for long periods of time without deterioration. There is no need for any antibacterial preservative if the serum is carefully prepared under aseptic conditions and properly sealed against contamination. Pooling of serum partially suppresses the iso-agglutinins and there is further inhibition of iso-agglutinins by the patient's blood.[10] Therefore, pooled serum may be given without any regard for blood groups and does not require preliminary typing and compatibility. This allows serum to be administered without delay. Serum after proper preparation requires no particular care (refrigeration temperatures for antibody preservation are of no concern), may be transported easily and can be handled and injected as simply as saline solution. If serum transfusion should prove to be as effective in treating hemorrhage and subsequent shock in man as it appears to be in the dog, it would be a valuable and effective blood substitute. The advantages enumerated, principally those of immediate availability and innocuousness, recommend its use. It overcomes all the effects of hemorrhage except the loss of red blood cells; it is obvious that this loss, when sufficiently great, requires ultimate replacement by whole blood. The use of serum, however, as an interval therapy, should prevent the development of shock. It should remove the need for "emergency" transfusions and the necessity for hasty blood typing and compatibility tests. Serum transfusions as an immediate and interval therapy should prevent or combat oligemia, shock, acidosis and the like, so that if blood is subse-

19. Rous, Peyton, and Turner, J. R.: The Preservation of Living Red Blood Cells in Vitro: II. The Transfusion of Kept Cells, J. Exper. Med. 23: 239 (Feb.) 1916.

20. Moon, V. H.: Shock and Related Capillary Phenomena, New York, Oxford Medical Publications, 1938.

21. Hooper, C. W.; Smith, H. P.; Belt, A. E., and Whipple, G. H.: Blood Volume Studies: I. Experimental Control of a Dye Blood Volume Method, Am. J. Physiol. 81: 205 (March) 1920.

22. Barcroft, Joseph: Physiology of Spleen, J. Physiol. 60: 443 (Oct.) 1925.

22a. Beard, J. W., and Blalock, Alfred: Intravenous Injections: A Study of the Composition of the Blood During Continuous Trauma to the Intestine When No Fluid Is Injected Continuously, J. Clin. Investigation 11: 249 (March) 1932.

23. Those institutions which have established "blood banks" may use the plasma from older, unused blood instead of discarding it.

quently administered it will be given to overcome secondary anemia rather than to treat the shock and collapse that is customarily encountered following massive hemorrhage. Furthermore, the necessary surgical treatment for the primary cause of hemorrhage may be instituted more promptly and is attended by more success when the patient is rapidly relieved from shock and is in good general condition.

There is urgent need for an effective blood substitute. Even in large hospitals and in large cities where blood can be secured with relative promptness there are situations in which immediate availability and injection of a good blood substitute would improve the therapy and enhance the prognosis. A greater need for a blood substitute exists in small institutions and small centers of population where there is greater delay and more difficulty in performing blood transfusions. Sterile flasks of serum could be kept on hand for an indefinite time and the serum could be promptly administered when a situation arises in which transfusion is urgently needed.

There were many publications and much research during and following the World War on the subject of blood substitutes because of the great need for such material at the battle front. Saline solution and acacia were used commonly although they were not satisfactory. Preserved red blood cells [24] were employed in a very limited way. "Preserved" or "refrigerated" blood rendered valuable service during the recent civil war in Spain, and this substitute for fresh blood is receiving prominent consideration [25] by the countries engaged in warfare at present. There are many drawbacks inherent in the use of refrigerated blood under front line conditions: the limited time blood can be kept before deterioration, the necessity for rapid transportation at refrigerator temperature, the necessity for care in transportation to minimize erythrocyte destruction from shaking, and lastly the necessity for typing and compatibility tests (unless only group O blood is used).

If serum is as effective in overcoming the effects of hemorrhage in man as it appears to be in dogs, then certainly it would provide the ideal substitute at the battle front. Since serum requires no particular care in handling and no preliminary testing and may be preserved for a long time, it can be processed in ample quantities from the blood of noncombatants in civilian centers far removed from the war front, prepared in proper containers ready for use and distributed directly to the front, where it can be stored until used. A wounded person who has lost much blood or is in shock can receive an injection of serum at a first aid station before he is transported to the base hospital, at which place, additional serum (or blood) can be administered. There is reason to believe from our experiments that such means, allowing for prompt volume restoration with a fluid retained in the circulation, would be a great factor in decreasing shock and mortality from wound trauma and hemorrhage. We have had the opportunity to employ pooled human serum in a limited number of cases of hemorrhage or shock. The effects from immediate human serum infusion on the blood pressure and general condition in these cases paralleled the beneficial results observed in our animal experiments. We expect to continue and amplify these clinical studies on human beings and we hope that others will find this subject of sufficient interest and value to employ serum transfusions and to observe and report their results.

24. Robertson, O. H.: Transfusion with Preserved Red Blood Cells, Brit. M. J. 1:691 (June 22) 1918.

25. Use of Refrigerated Blood for Armies, Paris letter, J. A. M. A. 111:1311 (Oct. 1) 1938.

SUMMARY

1. Immediate restoration of fluid volume following extensive hemorrhage prevents the development of secondary shock.

2. Delay in restoration of fluid volume following extensive hemorrhage permits the development of secondary shock.

3. Crystalloid solutions are ineffective when secondary shock develops after severe hemorrhage.

4. Serum is an effective agent in combating all the effects of severe hemorrhage and resultant secondary shock except the loss of red blood cells.

5. Erythrocyte loss is not serious unless very extensive.

6. Whole blood, the best restorative agent, requires time consuming laboratory tests preliminary to administration, leading to an unavoidable delay counteracting its ultimate beneficial effects.

7. Serum may be given in massive amounts without any delay or preliminary testing.

8. Serum can be used as an interval measure preceding blood transfusions or as a substitute measure when blood is not available or when erythrocyte loss is not too extensive.

9. Human serum, as a blood substitute, should find wide use not only in civil emergencies but particularly in time of war at the battle front.

PRESENT DAY CONCEPTS OF CONVALESCENT CARE

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Realizing the importance of convalescent care and the necessity both of bringing this importance to the minds of the medical profession and of improving the quality of the small amount of institutional convalescent care available, the Public Health Committee of the New York Academy of Medicine formulated and published in 1925 a set of standards for convalescent care. A recent review of these standards brought about the realization that certain advances in knowledge of nutrition and of the adverse influence of various psychosomatic disturbances on restoration to health warranted a renewed study of the whole subject of convalescent care.

A two day symposium on the problem of convalescent care was held at the New York Academy of Medicine Nov. 9 and 10, 1939, under the joint auspices of the Committee on Public Health Relations of the academy and the Josiah Macy Jr. Foundation. At this conference some twenty papers were presented by distinguished physicians dealing both with the broad problems of convalescent care and with the special needs of patients recovering from particular illnesses.

My purpose in this paper is to organize and present this wealth of material so as to bring out in a relatively small compass the important points emphasized, and in the light of the information obtained to outline some program for the future.

The papers referred to in the footnotes are to be published by the New York Academy of Medicine in the Proceedings of the Conference on Convalescent Care.

Read before the Conference on Convalescent Care at the New York Academy of Medicine under the auspices of its Committee on Public Health Relations, Nov. 10, 1939.

THE PATIENT AS AN INDIVIDUAL PROBLEM

First, to touch on the inadequacies of the present situation, one may say that practically nowhere are the standards formulated fifteen years ago met at the present time. To put it tersely, the consensus at the conference was that in this country at least we are doing but little in the way of organized convalescent care and what we are doing we are doing, for the most part, very badly.

There are about 8,000 beds for convalescent care throughout the entire country. Four thousand of these are in the New York City metropolitan district, which leaves only 4,000 for more than 120,000,000 people.

The chief responsibility for the inadequacy of facilities and for the inadequacy of standards of convalescent care rests squarely on the medical profession.

It is a severe indictment of our profession that we as physicians, and particularly those of us who have the benefit of hospital practice and experience, are much more interested in disease than in patients. Adequate convalescent care requires interest in the needs of a patient as a person; we are interested in the patient as a case. The very phrase that interns use (and one rarely criticized) that "here is an interesting case of heart disease" rather than "here is a patient with an interesting heart disease" supports this point.

I admit that in large urban centers there may be some slight justification for this attitude. In large hospitals, particularly those with rapid turnover of patients, where most of the visiting staff do voluntary duty, there are so many pressing medical problems in connection with the large number of patients under their care that little time is left after attending to these needs for concern over the apparently secondary factors of after-care and the restoration of the patient to health, together with an inquiry into whether the environmental conditions to which the patient returns are conducive to the maintenance of health.

The knowledge that in such a vast majority of instances these environmental factors are hopeless of correction, and the lack of sufficient personnel in the social service department of many hospitals to make more than a few routine inquiries, bring an attitude of defeatism about doing much for the patient after discharge from the hospital. Yet the fact remains that disease, rather than the patient, is still the primary interest of most physicians, and one of the points most emphasized and reemphasized in the round table discussions was that no satisfactory results in convalescent care will be secured until there is general acceptance as a fundamental principle of the idea that in convalescent care attention must be focused on the patient as a person who has been ill and is recovering strength and has particular and individual problems to be considered in his course to recovery.

NUTRITION AND CONVALESCENCE

Another reason why even in our limited number of convalescent institutions we fail to do our best for these patients is that we still look on this period as one which presents merely an opportunity to obtain a rest interval before returning to home and work, and in which rest and diet are to a great extent carried out in a purely routine manner.

This is largely due to the fact that in the convalescent care, and even in the hospital care of many of our patients, we have failed to put into practical use the great increase in our knowledge during the past fifteen years in the field of nutrition and nutritive disturbances. In his presentation, Dr. Kruse [1] has reviewed the tremendous increase during this period in our knowledge of the nutritive needs of the human being and of the various clinical syndromes which have been recognized as due to nutritive inadequacies of one or more essential factors, particularly in diet. It has become possible to postulate and determine a basic diet which will contain the essential elements in sufficient quantities of vitamins and minerals, apart from caloric requirements, necessary to produce a state of nutritive balance for an individual of given size, age and activity. Frequently, especially in the low-income group and in various diseases, the diet of the patient prior to his entering the hospital falls short of containing the minimum amount of the required essentials, so that the patient frequently arrives for treatment in a condition of nutritive inadequacy even though it be in a subclinical state. A further drain on nutrition may be produced by an episode of acute illness, during which frequently in the hospital no attempt is made to meet the nutritive requirements of the individual in respect to his particular disease process and his previous dietary inadequacy. Finally, in convalescence we usually place our patient on a routine diet which in no way takes into consideration his nutritive needs in respect to his previous dietary inadequacy or the nutritive depletion of his illness and then send him back in a state of serious negative nutritive imbalance to his home, where his diet may again be insufficient for his basic requirements.

In other words, in our convalescent homes we are still labeling our diets as "regular diet," "soft" or "solid diet" (according to their physical characteristics) or "cardiac diet" or "nephritic diet" or "convalescent ulcer diet" or "colitis diet," according to the disease from which the patient is convalescent, without any thought as to whether any of these diets are adequate to repair the nutritive deficiencies from which this or that individual patient may be suffering.

Again here you see the new thought in convalescent care, that the especial needs of the particular individual who is seeking to regain health, rather than the convalescent care of a case of pneumonia, or rheumatic fever, or appendicitis, is the thing of paramount importance.

PHYSIOLOGY AND PSYCHOLOGY OF CONVALESCENCE

Dr. Pepper,[2] in a paper covering the general problems of convalescence, regards the medical neglect of the convalescent state as due to the attitude, generally prevalent over many years, of attributing many remote phenomena of convalescence to psychologic causes. He challenges this as a theory accepted without sufficient supporting proof and states that the time has come to investigate the convalescent state scientifically to endeavor to discover whatever bodily or physical causes there may be for the phenomena of convalescence. The "convalescent state" is fallaciously assumed to be a single entity, produced by a common cause, exhibiting common phenomena and amenable to common management. In convalescence he declares, again emphasizing the need of studying the problem of the individual, that no two diseases—and I would add that frequently no two patients ill with the same disease—can possibly have the same state of bodily and psychologic conditions after the illness subsides and convalescence begins.

Certain diseases are known to produce physiologic and biochemical shifts from normal, and in a few dis-

1. Kruse, H. D.: Results of Recent Research in Nutrition, with Particular Reference to the Convalescent State.
2. Pepper, O. H. Perry: The Physiology and Psychology of Convalescence.

eases we know that this abnormality persists even after the acute phase of the illness has disappeared. This knowledge should challenge the medical profession to further study in other illnesses to ascertain whether there may not be much more evidence of disturbed physiologic, biochemical and nutritive processes in the convalescent state than has previously been suspected.

Even should we accept the fact, as some psychiatrists maintain, that a large proportion of the phenomena of convalescence arise in the mind rather than in the body, it may well be that many of these disturbances of psychology are dependent primarily on bodily dysfunctions.

It seems to me that this point of view is worthy of most careful consideration and respect. We know that the hyperthyroid patient is prone to psychologic and emotional imbalance; the diabetic patient in insulin shock can undergo the most profound personality disturbances; the exhaustion of childbirth, following the metabolic changes of pregnancy, may suddenly cause serious mental illness; physical and mental depression so often follow grip, and many patients at the onset of an acute illness are thrown into such an acute mental disorder that they are admitted to a psychiatric service, where only after examination their underlying illness is for the first time recognized. Moreover, psychic disturbances, after shock, trauma, and surgical operations, are well known.

Certainly, at any rate, if in convalescence there are persistent deviations from normal in metabolism, nutrition, body chemistry and physiology, restoration to health may well be expedited if attention is directed to correcting these abnormalities; and, again in this connection stressing the importance of the individual, not until we learn to recognize in each convalescent the actual abnormalities which persist from the preceding illness, and which differentiate that individual in convalescence from his condition in health, can we meet properly the therapeutic indications in his particular case.

PSYCHOSOMATIC FACTORS

From this discussion it is a natural transition to the consideration of the psychosomatic problems of convalescence presented by Dr. Robinson.[3] By this time I am sure that the psychiatrists are saying to themselves "True, all these psychologic conditions you have touched on may be brought about by organic illness or disturbed somatic functions, but we say that they have occurred because these individuals have some psychologic or emotional dysfunction or maladjustment which has made them react in this particular manner." Well, I am not denying this, though to my mind objective proof sustaining this contention may be difficult to adduce; and while I maintain that every effort should be made to restore the normal physiologic, biochemical and nutritional balance in the individual during convalescence, I also willingly grant the desirability of exploring the question of the existence of psychologic factors in each convalescent patient which may retard recovery and of initiating steps which may resolve these problems.

The practical question immediately arises as to how much can be accomplished in the field of psychotherapy in the limited period of institutional convalescent care, even allowing for a much greater elasticity in the duration of stay of particular individuals than is permitted at present.

Dr. Robinson does admit that the psychosomatic disorders of the patient as a person may be given rather scanty consideration during an acute illness and its convalescence, but he emphasizes that in chronic illness great attention must be paid to these factors. He makes a distinct contribution in showing the need of attacking these problems of psychologic disturbance as they arise in the course of chronic illness, a phase of treatment now greatly neglected. Where they are found in patients with chronic illness in convalescent institutions, they increase the duration of convalescence necessary to bring about a satisfactory adjustment. Also in this particular type of patient there arises the danger of increasing the patient's already strong feeling of willing dependence on the world in general and his resistance against facing life and developing a proper sense of personal responsibility. One other very important point made was that, after acute illness, convalescent care of a type which really restores the patient to health may well prevent the development of psychosomatic disorders which would be problems in later illnesses. Finally, the need was stressed of providing convalescent aid for the private patient of small means whose need for maintaining financial solvency frequently drives him to the resumption of his full activities all too early, and who is under much greater mental strain in his illness, as a result of anxiety over his expenses and possible loss of his job, than is the indigent patient in the hospital ward.

NEGLECTED OPPORTUNITIES

In the trend of this discussion there must have come to the minds of many still other opportunities heretofore neglected in convalescent care.

The first of these is the opportunity for the discovery and adjustment of environmental factors and family situations which may have contributed to the occurrence of the patient's illness and which may be militating factors against the preservation of health, once recovery is attained and the patient is back in his usual milieu. This is particularly useful for patients showing psychosomatic disorders, and emphasis is laid on the necessity of getting the cooperation of the relatives in helping the patient back to health.

Information having bearing on these conditions may have been obtained by the department of social service at the hospital during the patient's illness but only rarely are the results available to the authorities in the convalescent home. Too often nothing is attempted to alter these conditions for the benefit of the patient, and frankly all too frequently economic factors prevent the remedy of serious handicaps.

The fact remains, however, that at present in only a few instances are there two organizations, the hospital and the convalescent home, which are conjointly interested in the restoration of the individual to health, taking any cooperative measures to remedy conditions which may have been remote factors in the development of disease processes in an individual and which if uncorrected may continue to exert their baneful influence in undermining the health to which he has been restored.

The second opportunity is that of helping the patient during this period of rest and relaxation to evaluate himself, to take account of stock, to consider his habits of life and work in relation to their effect on his health, to judge whether both ends of the candle of life have been burning, and to determine whether certain dominating ambitions and tendencies are sufficiently important to strive for when measured against the nervous and bodily toll exacted; an opportunity to help him to

3. Robinson, G. Canby: Psychosomatic Factors in Convalescence.

develop a new philosophy and habit of life and work compatible with the reserves which age and illness have left him.

Unfortunately, in many of our convalescent groups it will be a case of "needs must when the devil drives"; but, even so, in general there is a golden opportunity here for sound work in health education which so far has been almost completely neglected.

So much then for what the conference has brought to our notice of the broader medical opportunities and requirements of convalescent care, together with the obvious deficiencies (apart from actual bed facilities) which at present exist.

SPECIAL NEEDS OF PATIENTS

Concurrent with these are the obvious recommendations which I shall briefly summarize at the end of my presentation, but before proceeding to that let us survey the special needs of patients suffering from certain types of disease and the general sense of the conference respecting these. Those which have been included for special consideration are the sufferers from cardiac diseases, renal disorders and infection of the urinary tract, gastrointestinal and respiratory ailments, cancer, postoperative hyperthyroid states, psychiatric disturbances, certain neurologic diseases, certain surgical operations and orthopedic conditions, as well as the recently delivered mother. There are also special requirements for children and the aged.

Obviously, to present the needs of any of these special groups in detail would take much more space than is available here. The outstanding fact disclosed in the discussion is that with the exception of the provision of convalescent care for patients with heart disease (and this to a very limited degree) none of the facilities available meet the medical problems involved; and here may be interpolated the interesting observation that in only one convalescent home serving New York City (that for cardiac children) is any scientific study being conducted to evaluate the efficacy of the methods employed.

In the opinion of the leaders in these fields, only by providing convalescent care in the setup of a convalescent hospital can the hope be entertained of restoring many of these patients to a reasonable state of health. This holds especially for most patients convalescent from the exacerbations of chronic illness, whose needs have been discussed by Dr. Boas,[4] and presents a serious economic problem but one which must be faced and solved if we do not purpose to continue in the performance of pious gestures.

The psychiatric patient, for his cure, requires a prolonged stay in the sheltering atmosphere of a convalescent institution of the home type with expert psychiatric and nursing guidance. Thence he can make attempts at contact with the outside world, increasing the duration of these as his confidence and ability to adjust himself return, and thus lessening the likelihood of the repeated breaks to which many of these patients are subject.

Many neurologic and orthopedic patients can be restored to a fair degree of practical efficiency only by a prolonged period of care in an institution providing elaborate types of physical therapy carried out by competent technicians under expert medical supervision. A knowledge by physicians of the use of these modalities and of their potentiality when properly applied is all too rare today. With a knowledge of the results which can be obtained in private practice in cases of hemiplegia, one can only speculate on how many helpless invalids with this disease who are now filling our wards might have been restored to a fair degree of functional efficiency by the employment of proper physical therapeutic measures earlier in the course of their disorder.

Patients suffering from renal disorders and other diseases and infections of the urinary tract are to be included among those who, in the opinion of Dr. McCann,[5] need care in the convalescent hospital as opposed to the convalescent home. He stresses one important point in respect to infections of the urinary tract—namely, that these infections tend toward a state of latent chronicity, that the treatment in the hospital simply disposes of the acute exacerbation, and that in order to prevent relapse and recurrent hospital visits it is necessary to achieve sterilization of the urinary tract. This should be carried out during the period of convalescence and for its accomplishment requires the setup of complete urologic technics and expert supervision such as can be obtained only under hospital conditions.

Discussion of the convalescent care of sufferers from prior hyperthyroidism and gastrointestinal disturbance emphasized the desirability of careful consideration and treatment of emotional and psychologic disorders which either were obviously manifest or else were potent factors in causing exacerbation of existing illness to the point of requiring hospitalization.

The necessity of obtaining satisfactory special diets in convalescence (at present not available) for sufferers from gastrointestinal disorders and the need of building up post-thyroidectomy patients were dwelt on, but nowhere did I note any special preoccupation with or interest in the fundamental nutritional needs or deficiencies of individuals convalescent from these various disorders, or any suggestion as how to cope with these problems as they arise in individual cases.

The newly delivered woman is at present greatly neglected. Although it is well known that the normal involution of parturient organs takes at least eight weeks, most women are forced to resume the burden of household cares within two weeks of their delivery. Of the slender opportunities available for giving them help during this period, not one is satisfactory. The home which receives the mother alone is entirely unsatisfactory except for the woman who cannot nurse her child, as it means compulsory weaning. Homes which take both mother and infant present the grave danger of nursery cross infection unless nursing technics, professional standards and supervision are so high as to be prohibitive in cost. Furthermore, few mothers will be found willing to leave their families for this additional period. For this reason housekeeping aides are needed, but their training at present is inadequate. However, the potential possibilities in this form of assistance are great, and economically it is the cheapest form of aid. Apart from the practical means of easing the mother back gradually into full family responsibilities, unrivaled opportunities exist for instruction in household management, dietetics, cooking technic and child care. In brief, here is an opportunity for extensive health education as applied to a family unit.

No point of view of convalescent care for the mother is satisfactory which does not take into account the health of the infant as well. No one thing probably contributes so certainly to the maintenance of health

4. Boas, Ernst P.: Convalescence and Chronic Illness.

5. McCann, William S.: Convalescent Hospital Care of Patients with Diseases of the Kidneys and Urinary Passages.

in the first few months of an infant's life as breast feeding. Much more should be done at present in encouraging mothers to wish to nurse their infants for expediting the involution of their own pelvic organs, for the infant's physical condition and, as Dr. Powers [6] points out, for establishing a proper emotional relationship between child and mother. Much more should be done to educate the mother in the value of nursing in promoting this relationship and how after leaving the hospital she may so live and eat as to insure an adequate supply of her own milk.

One of the discussions which showed an important and salutory advance in thought was that on the broad question of institutional convalescent care for surgical patients. Dr. Ravdin [7] says that no longer is the operation considered "the major part of surgical therapeusis." What a far cry from the days of my own internship, when frequently the first introduction of the operating surgeon to the patient was when he saw him anesthetized on the operating table and incised him to see whether the house surgeon's diagnosis was correct. Dr. Ravdin's thought follows so closely the trend of those which I have been unfolding, and he expresses it so well, that I feel that it can best be presented in his own language:

> The patient with a gastric ulcer becomes John Jones who has a gastric ulcer. Each patient before and after operation becomes an individual problem, and this provides a closer relationship between the surgeon and his associates and the patient.

Again, listen to this:

> The past emphasis on the economic values of convalescent care naturally had as its outcome a lack of intelligent interest in the planning of the institution for convalescence, and there are few quantitative studies available from which we may draw information as to the value of such care and the type of organization most suited to provide transitional medical and surgical treatment. It is to be hoped that this conference may bring forward for discussion the requirements from the medical and surgical points of view and point out the value of carefully controlled studies during the convalescent period.

Another practical and worth-while suggestion which the surgeons made was that of utilizing convalescent institutions for preoperative treatment of persons who need building up into a state of nutritive balance—a sort of convalescence-in-reverse process which would improve operative results and shorten the postoperative convalescent period.

There is a generally growing feeling that in order adequately to restore back to health patients who present difficult problems requiring special apparatus and technics and for whom convalescent care will be prolonged it will be necessary to develop institutions in which there will be a close and even interlocking relationship between the professional staffs of the hospital and the convalescent institution to which the patients are referred.

I regret that the lack of a background of practical clinical experience in the field of pediatrics renders me unable to summarize Dr. Nelson's [8] paper with the insight and interpretative ability it deserves. One may say, however, that in the case of children convalescing from various types of disease one faces the same need of special facilities, technics and equipment as in that of adults. For others who require more simple care the foster home has not been sufficiently utilized. Dr. Nelson pointed out that so-called malnutrition cases (most of which were considered environmental in origin) did not hold gains made in convalescent institutions and that a feeling against accepting them was growing. In the discussion it was brought out that in one institution the inauguration of a home visiting nurse service to educate the parents of these children in their dietary needs and in proper selection of their food was found to produce a marked decrease in the incidence of relapse.

At the other end of the life span Dr. Lewellys F. Barker,[9] who presented the needs of the aged and the special problems arising in their convalescent care, lays emphasis on the increasing importance of the convalescent care of the aged by indicating that in 1930 there were in this country about 12,000,000 children under 5 years of age and some 6,500,000 individuals over 65 years of age. However, with the diminishing birth rate and the prolongation of the life span it is probable that by 1975 there will not be more than 6,500,000 children of the age group just mentioned but there may be 30,000,000 individuals over the age of 60 and some 22,000,000 over the age of 65. This emphasis is particularly made with reference to the fact that even now, with our relatively small number of beds for convalescent patients, a considerable proportion of them are exclusively for children. He calls attention to the marked nutritional deficiencies in aged convalescents, vitamin, mineral and hormone, as well as actual impairment of body weight. These individuals with depleted reserve powers, lowered processes of assimilation, sluggish bodily response and the difficulty often of inducing an adequate food intake make the problem of rebuilding extraordinarily difficult. Added to this is the fact that few physicians are expert or even interested in geriatrics.

There are further difficulties encountered on the side of personality in handling older people; they are apt to be "crochety"; they have fixed habits, dislike change and often are childishly unreasonable. People in this age group are more apt to make satisfactory progress if segregated in convalescent wards or homes than when cared for in mixed age groups. He also feels that the younger group in the profession may not be so readily able to understand and handle these individuals as those with greater maturity and experience and riper judgment. This impression does not coincide with my own observation and experience. I agree that the young are often intolerant of the aged in their own home circle, but I think that old people frequently prefer having young physicians take care of them. They find them willing to give more time and to be less impatient with their whims and vagaries and prolixities. They feel that they are important and can boss the young doctor, who usually gains his point by circumvention or wheedling, a time-consuming process which the busy physician's practice does not permit. He also brings out one excellent point, and one which is very important for relatives of aged patients to recognize. After an episode of illness they should not be wrapped in cotton wool, hedged with restrictions and deprived of independence. Every effort should be made to keep them interested in life and with a feeling of importance in their new circle. Nothing hastens the aging process or causes a faster disintegration of personality than the feeling that one's usefulness is past and that one is ready for the junk pile.

6. Powers, Grover F.: Discussion of the Convalescent Care of Children.
7. Ravdin, I. S.: Institutional Convalescent Care for Surgical Patients.
8. Nelson, Waldo E.: The Convalescent Care of Children.
9. Barker, Lewellys F.: Convalescence of Old-Age Patients.

These then are the more important general and special problems which were brought to light during the conference. In parading these skeleton facts I hope that at least some of the shreds of the spirit of the conference which clothed them may be conveyed by means of this summary.

FURTHER QUESTIONS

The next questions are what to do, where to go, how to plan. The burden of responsibility for formulating the answers to these questions should be laid on the table of another conference, and I am sure that it will take more than one such conference before practical working agreements are reached. As an ultimate goal one may offer the following. It will be reached only after a period of many years, during which we shall have to put up with many expedients and makeshifts as we change our objective.

Apart from the quantitative increase in facilities which ultimately will be provided, we must face the fact that to accomplish the ends we are seeking we also ultimately, with few exceptions, must scrap completely the type of organization under which our convalescent institutions at present operate.

We must face the fact that to restore these patients to health we cannot depend on their casual supervision by a general practitioner in the neighborhood. We cannot let the choice of a matron-in-charge depend on the financial embarrassment of some widowed gentlewoman who is a social acquaintance of wealthy members on the board of trustees.

Each institution should have a full-time medical head, free from administrative duties, well grounded in the new knowledge of the biochemical, physiologic and nutritive disturbances which occur in illness and persist in convalescence. In addition he should have a fair understanding of the psychologic disturbances which his patient may show, and some knowledge of the technics for the correction of these.

If such a paragon does not exist we shall have to develop him or, more likely, we may find that we shall have to have a second physician who will devote himself exclusively to the psychologic problems of the individual patient. These two men should not be so narrowly trained that their points of view are mutually antagonistic, a condition of mind today which is rather prevalent. In addition an expert dietitian trained in the modern knowledge of nutritive requirements is necessary, as well as nursing personnel, the type and number of which will be determined by the types of disease which the institution receives.

This implies an overhead expenditure which will not justify a bed capacity below a certain minimum, which will be gradually determined by experience.

In order to apply our more recent knowledge for the benefit of the convalescent patient, convalescent homes will have to receive from hospitals regarding all patients referred much more detailed reports as to their medical condition on discharge and also medical social workers' reports, which will stress those economic and environmental factors which may have been predisposing causes for their breakdown and which may militate against health maintenance when the patients return home. In connection with this it is interesting to note that the reference cards now in use in New York City contain the large space of one and a half lines for all medical and social information.

Gradually there should be developed more and more convalescent institutions, offering facilities usually found only in a hospital, for a clinical check-up on patients recovering from certain types of disease and in these institutions also must be installed considerable equipment, especially in the field of physical therapy. This, of course, presupposes the inclusion in the personnel of technicians capable of handling these modalities and a medical man with a knowledge of their indications.

Eventually, I can also foresee that the realization will come that for patients recuperating from certain diseases a close interrelationship between the hospital and the convalescent institution will be found desirable and that members of the attending hospital staff will receive periodic assignments to duty at the convalescent institution. It is interesting to note that in a few instances this is already an accomplished fact.

In view of this possibility, the location of convalescent institutions in respect to their distance from hospitals must be given consideration. With the realization that other factors in the treatment of convalescence may be as important as rest, fresh air and sunshine, a plan recently developed by Commissioner Goldwater may present great potentialities. He has planned to convert the roofs of two of the tuberculosis hospitals now under construction into day camps where patients after their discharge may return to spend the day for periods to be determined by the hospital staff. The possibility of extending this form of convalescent care to other types of patients in other hospitals, where practical, might provide at minimum expense a satisfactory setup for patients still in need of hospital facilities for investigation and treatment where they would be under daily supervision by the same hospital staff as they were during the acute phase of their illness.

Convalescent care for the recently delivered woman should be broadened. The housekeeper service should be greatly extended and some plan should be evolved, in connection with this service, whereby these activities may be used as a demonstration to the mother and family of how to carry out household duties more efficiently and economically, and whereby during this period they may be fitted into a program of health education for the family unit.

Finally, if we are not to go blundering on, certain convalescent institutions should be selected as experimental stations in which, through study, we may increase our knowledge concerning the biochemical, physiologic, nutritive and psychosomatic problems of the convalescent state. In these institutions, scientifically controlled methods of treatment should be evaluated by careful analysis of the results obtained.

This field is practically unexplored. The time necessary for such investigation to be of proved value would cover a period of years, and the cost would be considerable. To finance such studies would be one of the greatest contributions to health preservation and disease prevention that foundations could make.

The program just presented is idealistic, but unless we strive for the ideal we shall remain glued in the morass in which we have been fixed these many years. If the type of convalescent care advocated is deemed unpractical, it is largely because of its economic implications. However, which is the more expensive, hospital care or convalescent care? Don't we admit that a lot of hospitalization results from failure to restore patients to health after previous illness? Isn't it likely that with more convalescent care of the right kind less hospital care will eventually result? What will be the balance of expenditure between the two? Who knows? There may be no total increase.

But with a setup of convalescent care which is sound medically and which we feel sure will accomplish what convalescent care is supposed to accomplish and which it now fails to do, and which will caus a broad increase in health and the happiness of living, who can say that it is utopian? In the light of our present vast expenditures on human suffering, should we not strive for this ideal, through which, by handling our problems of convalescence in an intelligent and scientific manner, much of this human suffering may be prevented and much of the expenditure for it eliminated?

AORTIC REGURGITATION AND MITRAL STENOSIS IN A MARATHON RUNNER

WITH SPECIAL REFERENCE TO THE EFFECTS OF VALVULAR HEART DISEASE ON PHYSICAL EFFICIENCY

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At the compulsory medical examination of competitors in the marathon race at the Royal Scottish Gathering in Johannesburg, South Africa, in 1935, competitor G. M., aged 32, was found on cursory examination to have both systolic and diastolic murmurs over the apex and base of the heart and a diffuse and markedly forcible impulse.

It appeared to us that these abnormalities constituted sufficient reason to advise him against participation in the race. He stated, however, that as he had competed in similar races on many occasions in the past without ill effects he saw no reason why he should not run, and consequently he did not follow our advice. On the day the marathon race took place the weather was extremely warm and our subject was one of the four who completed the race out of a field of seventeen. His time for the race, approximately 26 miles, was three hours and two minutes, which under the circumstances of the intense heat and of the altitude (approximately 6,000 feet above sea level) represented a performance of international standard. His condition after the race was surprisingly good and his recovery time was short as compared with that of the other competitors.

As this case appeared to us extraordinary, it was decided to investigate the subject further. Clinical investigations, supplemented by electrocardiographic and roentgenologic studies, were carried out over a period of four years. On several occasions, observations were made before and immediately after long distance runs. Our observations are here presented.

REPORT OF CASE

History.—G. M. is a carpenter. He states that during childhood he was very weak and that because of rickets he could walk only with the aid of metal supports. He suffered from the usual childhood diseases, such as measles, scarlet fever and whooping cough. At the age of 9 years he contracted a severe illness which, although he says it was thought to be typhoid, seems more likely to us to have been rheumatic fever, because at the time his joints were swollen and painful and the physician believed that his heart was affected. It is also alleged that in the course of this illness he contracted pneumonia. In the following years he suffered from various complaints such as headache, biliousness, palpitations, vomiting and other minor ailments. He was, as he stated, a "cripple." At the age of 16 he was readmitted to the hospital, this time for treatment of "intestinal trouble," the nature of which he is unable to state. Shortly afterward, bilharziasis was diagnosed after he had passed blood in the urine for a considerable period. After approximately fifty injections of antimony and potassium tartrate the bilharziasis was cured. At the age of 19 he suddenly fell ill again with a high temperature and rigors. He did not regain full strength, but in spite of his poor condition, after persuasion by his friends, he decided to play rugby for his club on one occasion. After this game he collapsed and was taken in an unconscious state to a hospital. There his condition was regarded as so alarming as to warrant sending for his parents. He remembers neither the collapse nor the subsequent hospital treatment. According to his statements his joints, particularly the knees, were swollen, his temperature was 104 F. and his pulse was regular but slow. Only after having spent four months in bed could he walk again.

His legs were atrophied to such an extent that he could walk only with the aid of crutches. Shortly afterward he contracted malaria, with repeated attacks of rigor and fever, which were treated successfully with quinine and brandy. At the age of 25 he was the victim of a motor car smashup in which he received severe burns over the chest and, in addition, his right knee joint was pierced by a fragment of metal, later to be removed surgically. A short time afterward he underwent an operation for inguinal hernia, since which time he has remained in good health.

Athletic History.—Since 1932 he has undergone a hard and systematic athletic training. He has been remarkably successful as a long distance runner, having participated in fourteen marathon races, always completing the distance. He won the South African Marathon elimination race for the British Empire Games in 1934 in two hours and fifty-four minutes (distance approximately 26 miles). On two occasions he entered the annual 54 mile race from Durban to Pietermaritzburg and covered the distance in good time, his record for this race being eight hours twenty minutes. On numerous occasions he has run from Johannesburg to Pretoria, a distance of 36 miles. During the past two years his athletic performances have further improved; in September 1937 he competed successfully in two marathon races within eight days. At the time of writing (1939) his physical condition continues to be excellent and he is still racing regularly in competitive events as well as frequently running long distances at his own leisure. Recently he has commenced playing squash raquets and is now one of the most prominent players in Johannesburg.

Physical Examination.—The subject is tall and thin. His height is 5 feet 10 inches (178 cm.), his weight, 142 pounds (64.4 Kg.). His skin is somewhat pale but shows no exanthema or other abnormality. There is no edema. The lymph nodes are not enlarged. Examination of the central nervous system and of the respiratory, digestive and genitourinary systems reveal no abnormalities. The spleen and liver are not enlarged.

Cardiovascular System: The apical impulse is widespread, and its maximum is seen and felt in the fifth intercostal space 11 cm. from the midsternal line. It consists of a systolic thrust, followed by a slight second thrust, diastolic in time. A distinct thrill is palpable over the apical region, both systolic and diastolic in time. Two diastolic murmurs are heard. The one, early in diastole, is decrescendo, high pitched, soft and blowing in character. It is audible over the base and along the left sternal border, with the maximum intensity in the region of the third and fourth intercostal spaces, gradually disappearing in the direction of the apex. The other diastolic murmur, long, rumbling and low pitched, is heard only over a small area in the region of the apex and is accentuated when the patient leans toward the left side. These murmurs are considered as being indicative of the presence of aortic regurgitation and mitral stenosis respectively. The pulse rate is regular, with a frequency during rest (standing) of 70 per minute,

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there being no pulse deficit. The pulse is collapsing in type and of large amplitude. The arterial walls are not thickened, irregular or tortuous. The blood pressure has varied on different occasions from 150 mm. of mercury systolic and 60 diastolic to 130 systolic and 45 diastolic.

Roentgenologic examinations of the heart were carried out on four occasions. In May 1936 the transverse diameter of the heart was 14.9 cm. and of the chest 30 cm., the ratio thus being normal. In December 1937 a careful radiologic examination carried out by Dr. Maurice Weinbren again revealed no enlargement of the cardiac silhouette in relation to the outline of the chest. There was no characteristic deformity of any portion of the heart, especially no left ventricular hypertrophy and no enlargement of the left auricle. With a barium sulfate swallow there was a rather marked aortic impression on the esophagus, but there was no increase of the pulmonary artery and the left auricular impression. There was no marked prominence in the region of the conus pulmonalis and also no definite prominence of the left auricle in the oblique view. The aortic arch was high and showed extremely marked pulsation. The lungs were of normal transradiancy, and no adventitious shadows could be seen.

ELECTROCARDIOGRAPHIC STUDIES

Electrocardiograms were obtained under different conditions. On one occasion immediately after a run of 20 miles serial electrocardiograms were taken at five minute intervals over a period of one and one half hours. The methods used for the analysis of the tracings were similar to those elaborated on in a previous paper.[1]

Special consideration was given to time intervals and voltage changes which occurred in the various components, to the duration of the cardiac cycle, to the length of ventricular contraction and ventricular diastole, as well as to the sino-auricular-ventricular conduction time. The contour of the serial voltage changes in the various leads was studied and the obseravtions were interpreted in the light of the recent studies published by Schlomka and his collaborators.[2] In this way it was found that the electrocardiographic reactions were such that it could be concluded that the myocardium and conducting mechanism were of a high standard of efficiency.

Vasomotor Collapse.—On three occasions one of us (E. J.) has had the opportunity of observing in our patient typical attacks of vasomotor collapse. On the first occasion the subject was running in a cross country race when, approximately a quarter of a mile before the finish, he appeared to be unable to maintain his balance and reeled from one side of the road to the other as if intoxicated. Within 220 yards of the finish he collapsed and fell to the ground, where he lay dazed and pale. After a few seconds he rose and, staggering toward the tape, completed the race, when he again collapsed. On this occasion he was deeply unconscious for one minute, dazed and incoordinate for a further fifteen minutes and remained weak and listless for the rest of the day. It is of interest that three days prior to the race he had had an attack of malaria with chills and fever.

Similar attacks occurred on two other occasions. One of these took place one afternoon while training before he had started running. Subsequent to this collapse he rested for a few minutes, after which he ran a distance of 4 miles. The style and speed of this performance, however, were noted to have been comparatively poor, although the patient himself was not aware of this fact.

COMMENT

The significance of this case lies in the relation it bears to the current views on the subject of the alleged dangers of exercise, and especially of what is termed "overexertion," to persons suffering from valvular disease of the heart. It is generally considered by medical men that patients with valvular disease of the heart should avoid exercise entailing undue exertion, such as competitive games, athletics, gymnastics and heavy manual labor, and that they should limit their activities to the milder forms of exertion, such as walking, golf and perhaps tennis. In fact, it is generally assumed that there exists a clear distinction between the effects on patients with valvular heart disease of light and of severe physical activities respectively. Moreover, in most instances the medical practitioner believes that such patients would actually be incapable of carrying out strenuous physical performances.

Although these views are applied chiefly when one is dealing with patients who are found to have diastolic murmurs, one encounters instances frequently in which physical activities are severely curtailed on medical advice because of the presence of uncomplicated systolic murmurs. With regard to the latter group of cases, such an attitude appears to be entirely unjustifiable in view of ample clinical evidence proving the benign nature of such murmurs, which in most instances do not even indicate organic valvular heart disease.[3] One of us [4] has described the case of the woman Olympic champion of the half mile race in 1928 who had previously been warned not to participate in athletic events because of the presence of an uncomplicated systolic murmur. Her disregard of this advice did not harm her in any way.

We have reason to believe that an attitude similar to that now held concerning uncomplicated systolic murmurs may also be tenable with regard to uncomplicated valvular disease of the heart presenting murmurs diastolic in time when these are due to aortic regurgitation and mitral stenosis or to aortic regurgitation alone, of rheumatic origin.

AORTIC REGURGITATION

There are several instances on record of persons with aortic regurgitation who showed noteworthy physical performances. One of us (E. J., 1936) presented the report of a man with aortic regurgitation of syphilitic origin who was able to carry out most strenuous industrial work, while the other (Suzman) has recently observed a man aged 34 years with aortic regurgitation of rheumatic origin who excels in long distance swimming. Parrisius [5] reported on a German ski champion presenting the signs of aortic regurgitation. Robinson [6] quotes Rudolph's report of a soldier aged 25 who, in spite of aortic incompetence as well as of "other valvular defects," was not only able to stand the stress of active service at the front for several years but actually outrivaled his fellows as an athlete. Cotton's [7] studies of soldiers indicate that aortic regurgitation is compatible with health, and he states that "disease of the aortic valve in itself gives rise to no symptoms." Robinson relates that he had an opportunity of seeing almost daily a colleague who had pronounced signs of aortic incompetence following rheumatic infection at the age of 5. Although he led an unusually active life and

1. Suzman, M. M., and Jokl, Ernst: An Analysis of a Series of Electrocardiograms Taken After Prolonged Intense Muscular Activity, South African J. M. Sc. **1**: 206 (June) 1936.

2. Schlomka, G., and Reindell, H.: Das Belastungs-Elektrokardiogramm: II, Arbeitsphysiol. **8**: 172, 1934. Schlomka, G.: Das Belastungs-Elektrokardiogramm: III, ibid. **8**: 705, 1935. Schlomka, G., and Lammert, C.: Das Belastungs-Elektrokardiogramm: IV, ibid. **8**: 742, 1935.

3. Mackenzie, James: Diseases of the Heart, ed. 4, London, Oxford University Press, 1918. Lewis, Thomas: The Soldier's Heart and the Effort Syndrome, London, His Majesty's Stationery Office, 1918. Jokl and Parade.[4]

4. Jokl, Ernst, and Parade, G. W.: Zur Frage der Beurteilung von Herzfällen in der sportärztlichen Praxis, Med. Klin. **29**: 1070 (Aug. 4) 1933.

5. Parrisius, W.: Ski Races, München. med. Wchnchr. **71**: 1601 (Nov. 14) 1924.

6. Robinson, G. C.: Nelson Loose-Leaf Living Medicine, New York, Thomas Nelson & Sons.

7. Cotton, T. F.: Mitral Stenosis in Soldiers, Brit. M. J. **2**: 840 (Dec. 27) 1919; Observations on Aortic Disease in Soldiers, Lancet **2**: 470 (Sept. 13) 1919.

engaged at one time in college sports, he had no symptoms. Finally, at the age of 32 he died of Streptococcus viridans infection. At autopsy the cusps of the aortic valve were extensively retracted and thickened and the left ventricle was hypertrophied but not greatly dilated.

Parade [8] described three cases of aortic regurgitation: A man aged 20, although being aware that "there was something wrong with his heart," had never complained and had been a keen football player, cyclist, ski runner and paddler. Another patient of Parade's, aged 24, with aortic regurgitation who had rheumatic arthritis a few years previously, was a keen sportsman and successful in athletic competitions. The third patient was an athlete aged 20 with aortic regurgitation. This man, whose condition is stated to have been of a congenital nature, had during his school days freely participated in sports and exercises. Later he became a keen ski runner and participated in rowing regattas and in tennis tournaments.

Dietlen [9] appears to be well acquainted with the fact that aortic regurgitation by no means makes outstanding physical performances impossible but considers it necessary to emphasize that great care must be exercised by persons in whom the condition has recently originated and that every person with aortic regurgitation must be kept under constant medical observation.

According to Warfield,[10] during the examination of some 40,000 young recruits at a camp in 1918 there were a number of youths with aortic insufficiency who were athletes, some record holders, who were quite unaware that they had any heart lesions. While he holds that men with such heart lesions should not enter competitive sports, his observations indicate the extent to which the compensated heart, though mechanically embarrassed, is able to perform. Warfield concludes that the child with a heart lesion should not necessarily be made into a "softie," although he makes one exception in that he urges such an individual not to attempt to swim beyond his depth and not to participate in swimming races or to play water polo.

Matthes [11] described the case of a soldier who was actively engaged in military service for a period of twenty years following the occurrence of aortic regurgitation, an aftermath of scarlet fever.

In an attempt to give a pathophysiologic explanation of the fact that patients with aortic regurgitation often show a high degree of physical efficiency, Schneyer [12] made systematic investigations of the effects on rabbits of experimentally produced valvular defects. He observed that, while after mitral regurgitation, tricuspidal regurgitation, aortic stenosis and pulmonal stenosis the "medium blood pressure" returns to the preexperimental level, aortic regurgitation on the other hand leads to a considerable permanent drop of "medium blood pressure." The extent of the valvular destruction has no influence on this reaction. Systolic pressure in cases of aortic regurgitation was found to be mostly above the pretraumatic level. (Although Schneyer does not clearly define his term "medium blood pressure," we assume that he refers to a level closely related to the diastolic pressure.) Fall of blood pressure leads to a lessening of the tone of the pressoreceptive nerves. Thus the precapillary bed constricts and prevents a further fall in blood pressure. Actually Schneyer has shown that the drop of blood pressure which immediately follows experimental production of aortic regurgitation in rabbits is doubled if the compensatory interference of the carotid sinuses is prevented by surgical denervation of these structures. Schneyer emphasizes that aortic regurgitation is the only valvular lesion in which nervous control from the carotid sinuses counteracts and compensates the hydrostatic effects.

MITRAL DISEASE

Jokl and Parade [4] investigated the case of a cycling champion whose racing performances rapidly declined following an attack of rheumatic fever which resulted in stenosis of the mitral valve. It was pathetic to see how the patient tried in vain to overcome the handicap of his disease and how his courageous efforts to regain his former athletic prowess actually resulted in an acute severe breakdown during the race.

Among Dennig and Prodger's [13] experimental subjects were two who suffered from mitral stenosis and regurgitation of rheumatic origin. No signs of decompensation were present. They stress that while healthy subjects show a parallel rise of circulatory minute volume and oxygen consumption, the two patients were unable to increase their minute volume in accordance with their oxygen demands. Their peripheral utilization of oxygen during exercise was considerably greater than that of the healthy subjects. It is of interest that, in spite of these unfavorable results, one of the patients was able to carry out strenuous work in a quarry, that he played football and that during his stay at the clinic the investigators were able to study his reactions to a long distance race. Prodger and Korth [14] mention a patient with mitral stenosis and insufficiency who was compelled to discontinue exercise because hemoptysis developed. Using Knipping's apparatus, Marzahn [15] examined a patient with mitral stenosis and regurgitation whose pulse rate rose to 222 a minute during exercise of medium intensity. His circulatory minute volume was low (6 liters) and his maximal oxygen intake was limited (1,200 cc.). A normal person whose circulatory reactions were studied as control showed during a performance test of considerably greater intensity a maximal pulse rate of only 150 a minute and an oxygen intake of 2,800 cc. a minute. Herxheimer [16] writes that mitral stenosis always leads to an impairment of physical efficiency even if the deterioration of blood circulation is preceded by a short period of comparatively high working capacity of the heart. Edens [17] draws attention to the fact that a hypertrophied and dilated right heart is sometimes responsible for a satisfactory functional capacity of the blood circulation during rest but that the emptying of blood depots during physical exertion often leads to a breakdown of the working ability of the left ventricle, the result being pulmonary edema. He illustrates his statement with a history concerning a young woman with mitral stenosis in whom pulmonary edema developed after a physical

8. Parade, G. W.: Herzerkrankungen und Sport, Med. Welt **10**: 1101 (Aug. 1) 1936.
9. Dietlen, Hans: Herzgrösse; Herzmessmethoden, Anpassung, Hypertrophie, Dilatation, Tonus des Herzens, in Handbuch der normalen und pathol. Physiologie, Berlin, 1926.
10. Warfield, L. M.: The Heart and Athletics: Modern Concepts of Cardiovascular Disease, monthly publication of the Am. Heart Assoc., vol. III, May 1934, No. 5.
11. Matthes, M.: Lehrbuch der Differentialdiagnose innerer Krankheiten, edited by Hans Curschmann, Berlin, Julius Springer, 1934.
12. Schneyer, K.: Beobachtungen an experimentellen Herzklappenfehlern, Verhandl. d. deutsch. Gesellsch. f. Kreislaufforsch., pp. 312-316, 1934.
13. Dennig, Helmut, and Prodger, S. H.: Herzkranke bei Arbeit, Deutsches Arch. f. klin. Med. **175**: 170, 1933.
14. Prodger, S. H., and Korth, C.: Effect of Light Muscular Training on Patients with Heart Disease, Arch. Int. Med. **55**: 204 (Feb.) 1935.
15. Marzahn, H.: Elektrokardiographische Untersuchungen bei Arbeit, Ztschr. f. klin. Med. **130**: 135, 1936.
16. Herxheimer, H.: Grundriss der Sportmedizin, Leipzig, Georg Thieme, 1932.
17. Edens, E.: Ueber die Störungen des Kreislaufs bei Mitralfehlern, Klin. Wchnschr. **18**: 405 (March 28) 1939.

performance of some magnitude. Edens concludes by saying that the heart is practically unable to compensate for stenosis of the mitral valve by myocardial adjustment such as occurs with other valvular defects. He therefore recommends the utmost care in the treatment of the condition and avoidance of strain of any description. The investigations made by Stewart and his collaborators [18] show clearly that the functional capacity of the heart is always markedly impaired if stenosis of the mitral valve is present, while insufficiency of the aortic valve either as an isolated defect or as a superimposed defect on mitral stenosis is compatible with little or even practically no functional impairment.

Since stenosis of the mitral valve invariably causes a distinct impairment of physical capability, we believe that it is the hemodynamic disturbance peculiar to this valvular lesion, namely the defective filling of the left ventricle and the consequent venous congestion, which is the primary responsible factor, although it is understood that a poor myocardium must enhance the disability still further.

AORTIC REGURGITATION AND MITRAL STENOSIS

When mitral stenosis is accompanied by aortic regurgitation, the effects on physical efficiency appear to be entirely different from those which are observed with mitral stenosis alone.

Prodger and Korth [14] carried out a study of the effects of light muscular training on six patients with valvular heart disease, three of whom had mitral stenosis and regurgitation with aortic insufficiency, while the other three had only mitral stenosis and insufficiency. The most striking improvement of physical efficiency during training was observed in the patients with the double valvular lesion, whereas the patients who failed to show favorable effects of training had disease of the mitral valve alone. "It might be thought," Prodger and Korth conclude, "that the changes which occur during training, whatever they are, are dependent on an adjustment between the greater and lesser circulations which can take place in the patient with a balanced disturbance, as it were, in both valves, whereas it cannot take place in a patient with the imbalance resulting from disease only of the mitral valve."

Nielsen [19] states that aortic regurgitation and mitral stenosis together have a better prognosis than either alone. He adds that, of the two, aortic regurgitation is the more serious condition as far as life is concerned, while as far as work is concerned mitral stenosis is the more serious.

Stewart and his collaborators [18] studied the effects of valvular heart disease on the dynamics of the circulation by observing the arteriovenous oxygen difference, cardiac index, cardiac output per beat, stroke volume per kilogram and left ventricular work per beat kilogram. As previously mentioned, they found that impairment of the functional capacity of the heart was less in those patients who suffered from a combination of mitral stenosis and aortic insufficiency, as compared with those who suffered from only mitral disease, and inferred therefore that aortic regurgitation is of functional benefit when superimposed on the mitral lesion. Aortic stenosis either alone or superimposed on the aforementioned valvular defects had an unfavorable effect.

It thus appears that the observations of other writers bear out the observations made on our patient, who in spite of the existing mitral stenosis, with its recognized unfavorable influence on working capacity, has been capable of extraordinary physical performances. It is reasonable to believe that, had the patient not had aortic regurgitation in addition, he almost certainly would have been unable to carry out the performances reported.

It is beyond doubt that his heart muscle is of the highest functional capacity. This is confirmed not only by the fact that the heart shadow is of normal size but also by the results of the electrocardiographic studies under conditions of severe muscular exertion. In view of our patient's high physical efficiency, this is what one would expect.

In view of the known benign effects of uncomplicated aortic regurgitation on physical performances, it is considered that the latter lesion (aortic regurgitation) has compensated for the disability expected from the coexisting mitral stenosis. In fact, we consider that overcompensation in this direction may have taken place, for, like Stewart and his collaborators, we have reason to believe that the presence of aortic regurgitation aids circulatory efficiency.

High pulse pressure, always regarded as a characteristic clinical sign of aortic regurgitation, has also been found in first class athletes [20] as well as in subjects with good resistance power against hot environment (Jokl and Weiner [21]), while an increase of pulse pressure has been observed during a period of systematic physical training in young recruits simultaneously with an improvement of endurance power.[22] In other words, there is at least one hemodynamic factor which is common to subjects with a high standard of physical efficiency as well as to persons with aortic regurgitation. It must however be pointed out that high pulse pressure cannot be the only factor responsible for the high standard of physical efficiency, as it is well known that high pulse pressure is found in cases of hyperthyroidism and of beriberi, in which conditions physical efficiency is greatly impaired.

In addition to the case dealt with in this paper, we have recently studied two other athletes with mitral stenosis and aortic regurgitation, so that the fact seems to be established that the combined valvular lesion of mitral stenosis and aortic regurgitation and a high standard of physical efficiency are by no means irreconciliable.

SUMMARY

1. A marathon runner was observed to have mitral stenosis and aortic regurgitation.

2. The significance of this case is worthy of note in view of current opinions on the subject of the alleged dangers of exercise to persons suffering from valvular disease of the heart.

3. The recently adopted more liberal prognostic interpretation of systolic murmurs may also be tenable with regard to uncomplicated valvular heart disease presenting diastolic murmurs when these are due to combined aortic regurgitation and mitral stenosis or to aortic regurgitation alone, of rheumatic origin.

Eloff Street.

18. Stewart, H. J.; Deitrick, J. E.; Watson, R. F.; Wheeler, C. H., and Crane, N. F.: The Effect of Valvular Heart Disease on the Dynamics of the Circulation, Am. Heart. J. **16**: 477 (Oct.) 1938.

19. Nielsen, H. E.: Clinical Investigations into the Cardiac Output of Patients with Compensated Heart Disease During Rest and During Muscular Work, Acta. med. Scandinav. **91**: 223, 1937.

20. Bramwell, Crighton, and Ellis, R.: Clinical Observations on Olympic Athletes: Results of Medical Observations During Eleventh Olympic Games, 1928 (Amsterdam), Berlin, 1929.

21. Weiner, J. S.: An Experimental Study of Heart Collapse, J. Indust. Hyg. & Toxicol. **20**: 389 (June) 1938.

22. Jokl, Ernst, and Goedvolk, C.: A Study of the Effects of Military Training upon Physical Efficiency of Young Recruits, to be published.

A STUDY OF "FALSE" FRIEDMAN TESTS FOR PREGNANCY

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In 1927 Aschheim and Zondek [1] reported that the urine of pregnant women contained large amounts of a substance capable of stimulating the ovaries in a manner similar to the action of the gonadotropic principle of the anterior lobe of the pituitary gland. This substance is now known as the anterior pituitary-like hormone. In 1928 these investigators [2] published the results of experiments in which they injected into mice the urine of pregnant women. Friedman [3] in the following year noted that the ovary of the rabbit likewise responded to injections of urine obtained from pregnant women. In 1931 Friedman and Lapham [4] published their application of this fact as a method of diagnosis for pregnancy. A survey of the reports published subsequently emphasizes the high degree of accuracy of the results obtained with the hormonal tests for pregnancy. However, these tests in common with other biologic tests are subject to errors, some of which may be due to faulty technic or may be inherent in the limitations of the test.

This report is based on 645 Friedman tests performed at the Mayo Clinic. Subsequent histories and observations established the presence or absence of pregnancy at the time the test was performed. Three hundred and two tests gave positive results and 343 gave negative results. Ten positive reactions occurred in the absence of pregnancy, and seven negative reactions were obtained when pregnancy was present. Thus, in 2.63 per cent of the tests the result was at variance with the ultimate diagnosis. The great majority of patients tested were those concerning whom the diagnosis of the presence or absence of pregnancy could not be determined definitely by history and physical examination at the time the Friedman test was performed.

The technic of the test is as follows: From 8 to 15 cc. of urine is injected slowly into the marginal ear vein of the rabbit. After forty-eight hours the animal is examined. Positive results of the test are indicated, on gross examination, by the presence of corpora hemorrhagica or corpora lutea or both. If these conditions are not clearly evident, the test is considered as giving negative results. Marked congestion of the uterus and oviducts is often strikingly present when the test gives positive results.

Certain precautions are observed in the performance of the test. The first urine passed in the morning is used and is injected within an hour or is kept on ice until it is used. If the urine is cloudy it is filtered. Rabbits younger than 2½ months are not used, but no objection has been found to the use of older rabbits if they have not recently copulated. To preclude copulation and pregnancy, the test animals are isolated in single cages for three weeks before they are used.

Since Friedman described the test there has been a tendency to modify it and still refer to it as the Friedman test. Thus, certain authors have concentrated the urine, others have injected urine into the rabbits several times over a period of several days, and others have used very large quantities of urine. Since the test is based not only on the fact that the rabbit does not spontaneously ovulate but also that the ovary of the rabbit is relatively insusceptible to the anterior pituitary-like hormone and that there are large quantities of such hormones in the urine of pregnant women, it is necessary that the dose of urine be restricted to amounts not greater than advocated by Friedman. If rabbits are injected with 8 to 15 cc. of the first urine passed in the morning and a positive result is obtained, the deduction that the patient is pregnant is justified. The total error in such deductions will not be more than 3 per cent, which, when compared with other biologic tests, is almost unbelievably accurate. Many more positive results will be obtained if larger quantities of urine are injected, but under these conditions one is not justified in deducing that the patient is pregnant, although this will be true in a large percentage of cases. In like manner, if positive results are obtained when small amounts of urine are injected, one may conclude that there is more hormone similar to that secreted from the anterior lobe of the pituitary gland than is present in normal pregnancy. One can eliminate so-called false positives due to such conditions as hydatidiform mole and chorio-epithelioma by injecting small amounts of urine into rabbits when these conditions are suspected.

It is our purpose in this paper to consider the relatively small group of reactions (seventeen of 645) that did not coincide with the diagnosis of the presence or absence of pregnancy. The Aschheim-Zondek and Friedman reactions are often considered as tests for pregnancy per se. However, it must be remembered that these are tests for the detection of the presence in the urine of a substance (like that secreted by the pituitary gland) capable of stimulating the ovaries of the test animal. This substance (or these substances) may be found in the presence of several physiologic and pathologic states other than pregnancy. Therefore it is natural to expect that such a fact would affect the accuracy of the test for pregnancy. Thus the terms "false positive test" and "false negative test" have been avoided in this paper because, in spite of the fact that they may be false with regard to the presence or absence of pregnancy, they may be true with regard to the presence or absence of demonstrable quantities of the principle or principles in the urine. In other words, the so-called error is not usually due to a failure in the test itself but is due to an associated physiologic or pathologic condition.

In evaluating the reliability of the Friedman test it is important to know some of the conditions which may give positive reactions in the absence of pregnancy. A review of the literature discloses the following conditions as being associated with positive reactions given by nonpregnant women: spontaneous or artificial menopause, menstrual disorders, ovarian cysts, carcinoma,

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1. Aschheim, Selmar, and Zondek, Bernhard: Ei und Hormon, Klin. Wchnschr. **6**: 1321 (July 9) 1927.

2. Aschheim, Selmar, and Zondek, Bernhard: Die Schwangerschaftsdiagnose aus dem Harn durch Nachweis des Hypophysenvorderlappenhormons, Klin. Wchnschr. **7**: 1453-1457 (July 29) 1928.

3. Friedman, M. H.: Effect of Injections of Urine from Pregnant Women on Ovary of the Rabbit, Proc. Soc. Exper. Biol. & Med. **26**: 720-721 (May) 1929; Mechanism of Ovulation in the Rabbit: II. Ovulation Produced by the Injection of Urine from Pregnant Women, Am. J. Physiol. **90**: 617-622 (Nov.) 1929.

4. Friedman, M. H., and Lapham, M. E.: Simple, Rapid Procedure for Laboratory Diagnosis of Early Pregnancies, Am. J. Obst. & Gynec. **21**: 405-410 (March) 1931.

treatment with anterior pituitary preparations, pelvic inflammatory disease, myxedema, gallbladder disease, genital tuberculosis and errors in technic.

MENOPAUSE

The menopause is one of the conditions which may give rise to a positive reaction from the urine of nonpregnant women. The decrease in ovarian activity associated with the climacteric is usually accompanied by an increased activity of the anterior lobe of the pituitary gland with a resultant increase in secretion of gonadotropic principle in an attempt to stimulate the failing ovary. Drips and others [5] found gonadotropic principle present in the urine in excessive amounts in 57 per cent of a series of women during the menopause. The severity of the hot flushes experienced by these women varied directly with the degree of excess gonadotropic principle found in their urine. Mazer [6] investigated the hormone content of the blood of women during the menopause. He found an excess amount of pituitary principle in about 60 per cent. The excretion of this principle in the urine may well account for the positive Friedman tests occasionally reported during the climacteric. Feresten,[7] Hannan,[8] Heiberg,[9] Mills,[10] Mull and Underwood,[11] and Ziserman [12] have reported positive pregnancy hormone tests given by menopausal women who were not pregnant. The group of patients studied by us included two cases in which positive Friedman reactions were given by nonpregnant women at the menopause.

Illustrative Case.—A woman aged 48 had been having irregular menses and hot flushes for eight years prior to coming to the clinic. In the past year she had had two periods of menstrual flow, the last of which had occurred three months prior to the performance of the Friedman test, which was reported as giving positive results. The hot flushes had been of increased severity during the past year. Her reply to our questionnaire revealed that she had not been pregnant.

MENSTRUAL DISORDERS

The same state of compensatory increased excretion of gonadotropic principle in the urine may occur in cases of pituitary-ovarian imbalance among younger women. In addition to irregular and abnormal menses, the patients may give complaints such as soreness of the breasts, increased nervousness prior to the menses, dysmenorrhea, menstrual migraine and occasionally menstrual edema or acne. It is reasonable to assume that the degree of severity of these subjective symptoms is usually proportional to the degree of disturbance of the normal relationship between the amounts of estrogenic hormone and gonadotropic principle. The amenorrhea that sometimes occurs in this type of case may be interpreted as a symptom of pregnancy, and further confusion may occur if a positive Friedman reaction is obtained. Studies of the blood or urine for estrogen are important to establish a definite diagnosis. The concentration of estrogen is usually low or zero in the urine of patients with primary ovarian failure but is high in pregnancy.[13] Estimations of pregnandiol are of value in the differential diagnosis in such cases. Wilson and one of us [14] found higher values for this excretion product of progesterone in the urine in early pregnancy than in urine of women with normal or abnormal menstrual function.

Mull and Underwood,[11] Reinhart [15] and Ziserman [12] have reported positive pregnancy reactions associated with menstrual disorders of nonpregnant women; the exact nature of the disorder, however, was not definitely stated.

Illustrative Case.—A woman aged 24 gave a history of irregular menses with a profuse flow of eight to ten days' duration and a period of amenorrhea for six months on one occasion in the absence of pregnancy. She had been amenorrheic for thirteen weeks when seen by us, and although physical examination revealed a questionably enlarged uterus its size did not correspond with that of a uterus after thirteen weeks of gestation. The Friedman reaction was positive. Another test, four weeks later, likewise gave a positive result. At the time of the latter Friedman test menstrual spotting had occurred for four days, without any particular discomfort, and continued for six days thereafter. Physical examination seven weeks later, with no menses in the interim, revealed no signs of pregnancy.

LOW BASAL METABOLIC RATE WITHOUT MYXEDEMA

The condition of nonpregnant patients who have a lowered rate of basal metabolism without myxedema, associated with amenorrhea and a positive Friedman reaction, might be considered to be ovarian failure secondary to deficiency of function of the thyroid gland. Bamforth [16] reported one case of amenorrhea in which the basal metabolic rate was — 37 per cent and the reaction to the Friedman test was positive although the patient was not pregnant.

Illustrative Case.—A woman aged 30 had had a sudden severe attack of gallbladder colic and cholecystectomy was advised. She gave a history of irregular menses; she had had periods of amenorrhea of from three to five months' duration. On one occasion she had menstruated for seven weeks. Her last menstrual period had occurred seven weeks before the physical examination, which revealed a slightly enlarged uterus and a slightly softened cervix. The Friedman test gave a positive result. At the time of cholecystectomy no evidence of pregnancy was found. Later the basal metabolic rate was found to be — 19 per cent. Following treatment with desiccated thyroid the basal metabolic rate was raised to — 5 per cent. Following this the menses appeared every six to eight weeks and the patient was subjectively better.

OVARIAN CYSTS

Ovarian cysts have on occasions been associated with positive reactions in the absence of pregnancy.[17] Woodhouse [18] reported two cases in which positive reactions were associated with tuberculous conditions involving the ovary. The explanation of the reaction is hypothetical but it is likely to be due to an endocrine imbal-

5. Drips, Della G.; Osterberg, A. E.; Fisher, Gertrude, and Lewis, Kathleen: An Evaluation of the Frank Method for the Determination of Prolan (Gonadotropic Principle) in the Urine of Nonpregnant Women, Endocrinology **23**: 703-710 (Dec.) 1938.

6. Mazer, Charles, and Hoffman, Jacob: Three Hormone Tests for Early Pregnancy: Their Clinical Evaluation: A Comparative Study, J. A. M. A. **98**: 19-23 (Jan. 3) 1931.

7. Feresten, Morris: Report of 1,600 Aschheim-Zondek Tests (Friedman Modification), Endocrinology **21**: 116-118 (Jan.) 1937.

8. Hannan, J. H.: The Zondek-Aschheim Test for Pregnancy, Brit. M. J. **1**: 150-151 (Jan. 25) 1930.

9. Heiberg, Børge: Reliability of Friedman Test as Pregnancy Reaction, Ugesk. f. læger. **99**: 387-395 (April 8) 1937.

10. Mills, H. R.: Friedman Test for Pregnancy: Report of 213 Cases, J. Florida M. A. **22**: 11-22 (July) 1935.

11. Mull, J. W., and Underwood, H. D.: Evaluation of Practical Use of Aschheim-Zondek Pregnancy Test, Am. J. Obst. & Gynec. **33**: 850-853 (May) 1937.

12. Ziserman, A. J.: Incidence and Significance of False Positive Pregnancy Reactions, Am. J. Obst. & Gynec. **26**: 204-212 (Aug.) 1933.

13. Smith, G. V., and Smith, O. W.: Further Quantitative Determinations of Prolan and Estrin in Pregnancy, with Especial Reference to Late Toxemia and Eclampsia, Surg., Gynec. & Obst. **62**: 27-35 (July) 1935.

14. Wilson, R. B., and Randall, L. M.: Studies on Pregnandiol: III. Excretion of Pregnandiol in the Diagnosis of Early Pregnancy, Proc. Staff Meet., Mayo Clin. **14**: 8-10 (Jan. 4) 1939.

15. Reinhart, H. L.: The Results of Two Years' Experience with the Friedman Test, Am. J. Clin. Path. **3**: 9-15 (Jan.) 1933.

16. Bamforth, Joseph: Experiences for the Friedman Test for Pregnancy, St. Thomas's Hosp. Rep. **1**: 132-139, 1936.

17. Mull and Underwood.[11] Ziserman.[12]

18. Woodhouse, D. L.: Zondek-Aschheim Reaction: Experience and Results in 500 Examinations, Birmingham M. Rev. **11**: 89-94 (June) 1936.

ance in which again an attempt is being made to stimulate a functionally failing ovary by an excess of anterior pituitary principle.

Illustrative Case.—A woman aged 27 complained of a marked lower abdominal cramping pain which had appeared at the time of an expected menstrual period. However, there had been no flow until seven days later, at which time she had awakened from sleep with vaginal bleeding sufficient in amount to saturate three pads, followed by a decrease in flow such that there had been a mere spotting of blood. Simultaneous with the hemorrhage there had appeared a sharp pain in the right lower quadrant of the abdomen which had confined her to bed. Physical examination revealed a soft, tender mass in the right side of the pelvis. On the third day after the onset of bleeding, microscopic examination of tissue obtained by dilation and curettage disclosed no placental or decidual material. Fifteen days later a Friedman test gave positive results. An exploratory laparotomy revealed a corpus luteum cyst of the right ovary but no evidence of pregnancy. No subsequent evidence of intra-uterine or extra-uterine pregnancy was observed.

MALIGNANCY

Malignant tumors have been mentioned by some authors as a cause of positive pregnancy hormone reactions. Grant and his associates,[19] Büttner [20] and King [21] reported cases of carcinoma associated with positive reactions of women who were not pregnant. Zondek [22] first claimed that 15 per cent of a series of patients suffering from malignant diseases gave the characteristic pregnancy response. Later, however, he [23] reported that the urine of women suffering from carcinoma usually produced only maturation of the follicles and rarely produced corpora lutea or follicles that were hemorrhagic. Our series of cases includes one in which a positive reaction was found in association with a squamous cell carcinoma of the cervix and probably with an ovarian cyst in addition.

Illustrative Case.—A woman aged 34 came to the clinic complaining of metrorrhagia and a clear, watery, occasionally bloody, vaginal discharge that had been present for two months. Examination revealed a squamous cell carcinoma of the cervix, stage 4. There was a large, soft anterior mass which appeared to be uterus. The patient's last period of menstrual flow had occurred four weeks before the specimen of urine was collected for the Friedman test. The test gave a positive response.

Radium therapy was instituted but was discontinued after one month owing to the presence of increasing discomfort from the large pelvic abdominal mass. This was incised and drained through a small abdominal incision; 2,000 cc. of an odorless, straw-colored fluid escaped. Later it was thought that the large soft mass, which seemed to be uterus, might well have been an ovarian cyst.

TUBAL PREGNANCY—THREATENED ABORTION

Since the anterior pituitary-like hormone found in the urine of pregnant women is generally conceded to be the product of chorionic villi, the hormone reaction in cases of tubal pregnancy and threatened abortion depends on the presence or absence of viable chorionic tissue. From positive reactions one may conclude that either an intact or growing placenta exists or that the fetus has recently died. An absolutely negative reaction justifies the contention that the fetus no longer lives. Kurzrok [24] reported that he had not seen a hemorrhage from a ruptured tube in the presence of a persistently negative test.

HYDATIDIFORM MOLE—CHORIONIC EPITHELIOMA

The hormone titer may be extremely high in the urine of women who have a hydatidiform mole. The amount of hormone depends somewhat on the size of the mole, the contact with the maternal circulation and the amount of degeneration present in the mole. A positive reaction may exist as long as six weeks following expulsion of the mole. An extremely high concentration of the hormone should arouse a suspicion of chorio-epithelioma, and a persistently positive test for more than six weeks following expulsion of a mole definitely favors the diagnosis of chorio-epithelioma. Our experience with these two conditions is consistent with the positive tests reported by others.

MISCELLANEOUS

The experiences of others in various conditions are pertinent to a study of the causes of unaccountable positive reactions. Bamforth [10] and Mull and Underwood [11] reported positive reactions given by women receiving anterior pituitary or anterior pituitary-like preparations. It should be remembered that specimens of urine of women receiving treatment for sterility or menstrual disorders, especially when receiving such preparations, or roentgenologic stimulation to the pituitary, may exhibit a positive Friedman reaction in the absence of pregnancy. Various authors have reported pelvic inflammatory disease, tubo-ovarian abscess, menorrhagia of puberty, hypertensive cardiac disease and cholecystitis as being associated with positive pregnancy reactions. Kraus [25] reported that increased intracranial pressure, such as that caused by tumors of the pituitary gland and compensatory hypertrophy of the pituitary gland must be considered as causes of increased excretion of gonadotropic principle in the urine. Never to be forgotten are the errors in technic which may appear in any type of biologic test.

NEGATIVE FRIEDMAN REACTIONS GIVEN BY PREGNANT WOMEN

A review of the literature discloses the following circumstances that may be associated with a negative reaction in the ovaries of the rabbit in the presence of pregnancy: performance of the test too early in the pregnancy, performance of the test prior to a miscarriage of nonviable chorionic tissue, a diluted specimen of urine, insensitivity of rabbit's ovary, hormone secretion in amounts insufficient to cause stimulation of the ovaries, and delayed injection of the urine with consequent deterioration of the anterior pituitary-like principle. Ovarian cysts have been found in examination of patients whose urine gave a negative result to the Friedman test.

In three of our cases of pregnancy that gave a negative reaction, the Friedman test was repeated at a later date and in each instance the second test gave a positive response. This serves to emphasize the importance of a second test when negative results to the test are obtained in the face of other evidence suggestive of

19. Grant, W. H.; Zibel, Nathan, and MacMahon, H. E.: Use of the Rabbit in the Aschheim-Zondek Test for Pregnancy, New England J. Med. **206**: 893-898 (April 28) 1932.

20. Büttner, W.: Ueber die biologische Schwangerschaftsdiagnose am Kaninchen als Testobjekt, Zentralbl. f. Gynäk. **56**: 2050-2057 (Aug. 20) 1932.

21. King, A. G.: Friedman Rabbit Ovulation Test in Differential Obstetric Diagnosis, J. Lab. & Clin. Med. **19**: 1033-1040 (July) 1934.

22. Zondek, Bernhard: Ueber die Hormone des Hypophysenvorderlappens: III. Follikelreifungshormon (Prolan A) und Tumoren, Klin. Wchnschr. **9**: 679-682 (April 12) 1930.

23. Zondek, Bernhard: The Relation of the Anterior Lobe of the Hypophysis to Genital Function, Am. J. Obst. & Gynec. **24**: 836-843 (Dec.) 1932.

24. Kurzrok, R.: Relation of Pituitary Gland to Pregnancy and Labor, A. Research Nerv. & Ment. Dis., Proc. **17**: 321-339, 1938.

25. Kraus, E. J.: Ueber Prolanausscheidung bei chronischem Hirndruck: Zugleich ein Beitrag zur Genese der kleincystischen Degeneration der Ovarien, Klin. Wchnschr. **11**: 1377-1380 (Sept. 17) 1932.

pregnancy. One of the specimens of urine tested was somewhat old, having been submitted several hours after voiding. Another patient submitted the second specimen of urine passed in the morning, which would be expected to be more dilute in hormone concentration than the first specimen.

It is quite generally recognized that a negative Friedman reaction earlier than six weeks after the last period of menstrual flow cannot be relied on, since the concentration of hormone in the urine prior to this time frequently is not sufficient to indicate a positive reaction. In five of our seven cases in which the urine to be tested was obtained between the sixth and seventh week after the last period of menstrual flow the reaction was negative, although the patients were proved subsequently to have been pregnant. From the results in these five cases, it seems likely that at times the hormone concentration may not be great enough to give a positive reaction before the seventh week.

It is interesting to note that two patients had been treated for syphilis and that each had had manifestations in the central nervous system.

Illustrative Case.—A woman aged 35 had her last menstruation forty-nine days before presenting herself for examination. She had experienced some nausea and vomiting for the past two or three weeks. Physical examination revealed a rather soft, slightly enlarged uterus and also a tender cystic mass high in the right pelvis. A Friedman test gave a negative reaction. Ten days later right salpingectomy was done for removal of a hydrosalpinx, and an intra-uterine gestation was then definitely diagnosed. A second Friedman test four weeks thereafter gave a positive response. She was delivered of a full-term baby forty weeks from the time of her last period of menstrual flow.

CONCLUSIONS

1. The Friedman test is based primarily on the fact that if anterior pituitary-like hormones are present in the urine in certain amounts they will be demonstrable by typical reactions in the ovary of the rabbit. While the test is not a test of pregnancy from an academic point of view, to all practical purposes it is so if the correct technic is followed.

2. Therefore the Friedman test is based on quantitative considerations. Excretion of the gonadotropic principle of the anterior lobe of the hypophysis in the urine in excess amounts may be responsible for a positive Friedman reaction in the absence of pregnancy.

3. Among the several physiologic and pathologic states other than normal pregnancy which may give a positive reaction are hydatidiform mole, chorio-epithelioma, the menopause, menstrual disorders such as primary ovarian failure, treatment with preparations of the anterior lobe of the pituitary gland and errors in technic.

4. A negative reaction to the Friedman test prior to the seventh week after the last menstrual period may not be conclusive, although authentic positive reactions may be obtained much earlier, frequently within four weeks after impregnation. A test that gives negative results before the seventh week should be repeated later.

Air Ambulances.—Airplanes were first used as ambulances rather inadvertently during the World War when pilots or observers flying over the enemy lines were sometimes wounded and yet able to fly back to their own landing fields where medical attention was available. France and England in 1919 were apparently the first countries to assign certain airplanes to the transportation of the sick and wounded.—Armstrong, Harry G.: Principles and Practice of Aviation Medicine, Baltimore, Williams & Wilkins Company, 1939.

VISUALIZATION OF THE CHAMBERS OF THE HEART

THE PULMONARY CIRCULATION AND THE GREAT BLOOD VESSELS IN MAN: SUMMARY OF METHOD AND RESULTS

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In 1938 we first described our method of visualizing the chambers of the heart, the pulmonary circulation and the great blood vessels and later published a detailed account of the technic and a summary of the results obtained in the first 133 cases.[1] Before that time there had been no practical way of visualizing the interior of the heart and of the intrathoracic blood vessels. Although the roentgen ray had become almost indispensable to the accurate diagnosis of heart and lung diseases, it gave an incomplete picture of the anatomy of the cardiovascular system, because the four separate chambers of the heart and their component parts were represented on roentgenogram and fluoroscopic screen by one shadow, and the intrathoracic blood vessels were seen indistinctly if at all. Roentgenologic diagnosis, therefore, had to rely on such indirect evidences of disease as alteration in the size, shape and pulsation of the cardiac and vascular shadows and the distortion and displacement of the esophagus, the trachea and the bronchi.

In other regions of the body such as the gastrointestinal, the genito-urinary and the tracheobronchial systems, more complete visualization of structure has been obtained by the use of contrast roentgenography; but this principle has heretofore had limited success when applied to the heart and the blood vessels within the thorax. In 1931 Forssmann [2] tried unsuccessfully to outline the interior of the heart by the injection of iopax into the right atrium through a catheter which he had introduced into a vein in the arm and advanced to the heart. In the same year Egas Moniz, Lopo de Carvalho and Almeida Lima [3] succeeded in visualizing the pulmonary arterial tree by cardiac catheterization and the use of a 120 per cent solution of sodium iodide. Several years later Nuvoli [4] visualized the thoracic aorta of two patients by puncture of the left ventricle and the ascending aorta, respectively, and the injection of sodium iodide. Two years ago Castellanos, Pereiras and Argelio García [5] described their method of outlining the superior vena cava, the right cardiac chambers and the pulmonary arterial tree in infants and in chil-

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From the Department of Therapeutics, New York University College of Medicine, and the Third (New York University) Medical Division of Bellevue Hospital.

1. Robb, G. P., and Steinberg, Israel: A Practical Method of Visualization of the Chambers of the Heart, the Pulmonary Circulation and the Great Blood Vessels in Man, J. Clin. Investigation **17**: 807 (July) 1938. Robb and Steinberg.[1a] Steinberg and Robb.[1b]

2. Forssmann, W.: Ueber Kontrastdarstellung der Höhlen des lebenden rechten Herzens und der Lungenschlagader, München. med. Wchnschr. **78**: 489 (March 20) 1931.

3. Egas Moniz, Lopo de Carvalho and Almeida Lima: Angiopneumographie, Presse méd. **39**: 996 (July 4) 1931.

4. Nuvoli, Innocenzo: Arteriografia dell'aorta toracica mediante puntura dell'aorta ascendente o del ventricolo s., Policlinico (sez. prat.) **43**: 227 (Feb. 10) 1936.

5. Castellanos, Agustin; Pereiras, Raúl, and Argelio García: Angiocardiography in the Child, VII Cong. Assn. Med. Pan American, Havana, 1938. Castellanos, Agustin; Pereiras, Raúl; Argelio García, and Vásquez Paussa, Angel: On the factors intervening in the obtention of perfect angiocardiograms, Bol. Soc. cubana de pediat. **10**: 217 (May) 1938.

dren less than 14 years of age by the intravenous injection of diodrast and iopax. These authors, however, could not visualize the right side of the heart and the pulmonary vessels of older persons, nor could they visualize the left chambers and the aorta except fortuitously in a few instances of congenital shunt from the right to the left side of the heart.

METHOD

Technic.—Our method of visualization consists of two fundamental parts: (1) opacification of the chambers of the heart and the blood vessels within the thorax by the intravenous injection of a radiopaque solution (70 per cent diodrast) and (2) roentgenography of these structures at the moment of their opacification.

The procedure is performed in two stages. In the first one the patient is seated with his arm resting on a table, and a specially designed 12 gage Lindemann needle with stopcock attached [6] is inserted into the principal vein at the elbow. After the position of the needle within the lumen has been verified by the injection of physiologic solution of sodium chloride, the circulation time from the needle to the pulmonary capillaries and to the carotid sinus is determined by modifications of the ether [7] and the cyanide [8] method respectively.

In the second stage, the patient is seated before the casette in the position giving the best view of the structures to be visualized (table 1). A special 50 cc. Luer-Lok syringe having a 12 gage tip [6] and containing from 30 to 45 cc. of the 70 per cent solution of diodrast [9] is attached to the needle-stopcock unit and approximately 15 cc. of blood is drawn into the syringe.

All is now ready for visualization. Under the injector's direction the patient exhales forcibly and then, at the command "Breathe in" he inspires deeply and quickly, and the injection is begun. The inspiratory position is held until the diodrast has had time to reach the pulmonary arterial tree and the first exposure has been made. The patient then exhales passively and breathes in again just before the time for opacification of the left side of the heart. The injection of the diodrast should be completed within two seconds. Roentgenograms are made at the predicted time of arrival of the opaque solution in the

TABLE 1.—*Optimal Positions During Visualization*

Structure to Be Visualized	Positions
Superior vena cava	Frontal and lateral
Cardiac chambers	Left and right anterior oblique
Cardiac walls and ventricular septum	Left oblique
Pulmonary and aortic valves	Right and left oblique
Pulmonary artery	Lateral and frontal
Right pulmonary artery	Right oblique and frontal
Left pulmonary artery	Left oblique
Smaller pulmonary vessels	Frontal
Pulmonary veins	Frontal, right and left oblique
Thoracic aorta and branches	Left and right oblique
Abdominal aorta and branches	Frontal

regions to be visualized, the predictions being based on the ether and the cyanide circulation times. For the normal person the intervals between the injection and the opacification of the various divisions of the cardiovascular system are surprisingly short (table 2). Except for overpenetration, the roentgenographic technic is that ordinarily used for the heart and the lungs.

THE CLINICAL MATERIAL

A total of 486 injections has been made on 233 patients, of whom fifty-seven were normal, seven had mediastinal disease, eighty had heart disease and eighty-nine had lung disease.

6. Made by Becton, Dickinson & Co.
7. Hitzig, W. M.: Measurement of Circulation Time from Antecubital Veins to Pulmonary Capillaries, Proc. Soc. Exper. Biol. & Med. **31**: 935 (May) 1934.
8. Robb, G. P., and Weiss, Soma: Method for Measurement of Velocity of Pulmonary and Peripheral Venous Blood Flow in Man, Am. Heart J. **8**: 650 (June) 1933.
9. Diodrast, concentrated solution (70 per cent), manufactured by the Winthrop Chemical Company, Inc.

RESULTS

Our observations regarding the normal cardiovascular system [14] and the changes occurring in mediastinal,[15] cardiac [16] and pulmonary [17] disease will now be presented briefly.

Mediastinal Disease.—The value of visualization in the diagnosis of mediastinal disease has been demonstrated by the results obtained in our series of seven patients. Five patients exhibited collateral circulation from the upper extremities and other signs and symptoms indicative of obstruction of the superior vena cava. Complete occlusion of this vessel, however, was excluded in every case by visualization, but a significant

TABLE 2.—*Average Normal Intervals Between Beginning of Injection and Opacification*

Structure	Interval in Seconds
Superior vena cava and right atrium	1-5
Right ventricle and pulmonary arterial circulation	2-3
Pulmonary veins and left atrium	5-7
Left ventricle	7-9
Thoracic aorta	8-10
Abdominal aorta	10-12

degree of stenosis was found in three instances. In the first of these the constriction was caused by metastases to the mediastinum from a primary carcinoma of the right upper bronchus. The second patient (figs. 1 and 2) showed conspicuous narrowing of the right innominate vein and the superior vena cava caused by a mediastinal tumor, which on necropsy proved to be a fibrosarcoma. There was extensive collateral circulation through the usual pathways of the thorax and shoulder girdle and, of greater interest, by way of the internal mammary and the azygos veins. In the third case the stenosis of the vena cava was caused by mediastinal Hodgkin's disease, which also compressed the right subclavian and innominate veins and occluded the left innominate vein, producing collateral circulation by way of the hemiazygos system. The vena cava of the next patient, who had a substernal goiter, was not involved, but instead there was stenosis of the right innominate vein and complete occlusion of the left one. The last person exhibiting the superior vena caval syndrome had dilatation of the superior vena cava and of the innominate veins and no demonstrable point of obstruction. Necropsy, however, showed that the pulmonary veins and the left atrium were obstructed by metastases from a primary carcinoma of the right bronchus.

In another case a huge teratoma caused displacement of the superior vena cava and stenosis of the left innominate vein, producing collateral circulation by way of the cervical vessels. At operation the tumor was found to be firmly attached only at the site of stenosis, and here troublesome hemorrhage followed its removal. The last patient had a deformity of the superior vena cava, displacement of the pulmonary artery to the left and compression of its right branch by tuberculous lymph nodes in the paratracheal and the right hilar regions.

14. Robb, G. P., and Steinberg, Israel: Visualization of the Chambers of the Heart, the Pulmonary Circulation, and the Great Blood Vessels in the Normal; Preliminary Study, to be published.
15. Steinberg, Israel, and Robb, G. P.: Mediastinal and Hilar Angiography in Pulmonary Disease: A Preliminary Report, Am. Rev. Tuberc. **39**: 357 (Nov.) 1938.
16. Robb, G. P., and Steinberg, Israel: Visualization of the Chambers of the Heart, the Pulmonary Circulation, and the Great Blood Vessels in Heart Disease; Preliminary Observations, Am. J. Roentgenol. **42**: 14 (July) 1939; Visualization of the Heart and the Thoracic Blood Vessels in Pulmonary Heart Disease: A Case Study, Ann. Int. Med. **13**: 12 (July) 1939.
17. Steinberg, Israel, and Robb, G. P.: A Visualization Study of Fibrothorax: Identification of the Cardiovascular Structures, Radiology **33**: 291 (Sept.) 1939. Steinberg, Robb and Roche (footnotes 20 and 21).

Heart Disease.—Characteristic changes were observed in heart disease. In congenital heart disease direct visualization of the abnormal communication has not yet been possible in interatrial septal defect, interventricular septal defect and patent ductus arteriosus. However, convincing evidence of its presence in the first and last disorders was provided by the recirculation of blood (and diodrast) and in the second abnormality by the selective enlargement of the two ventricles and the pulmonary artery, although neither defect nor recirculation was detected. Visualization of the aortic constriction and of the collateral circulation has been possible in coarctation of the aorta. In one patient, a 12 year old girl who also had healed subacute bacterial endarteritis and a mycotic aneurysm of the descending aorta, the aortic constriction, the aneurysm and the rich collateral circulation by way of the innominate, the subclavian and the lateral thoracic arteries were visualized.[19]

Fig. 1 (O. C., aged 62).—Malignant mediastinal neoplasm. Conventional roentgenogram, frontal position. Note widening of mediastinum, irregularity of right supracardiac border, infiltration of right lung with fluid at base and metastatic nodule underlying third left rib anteriorly.

The following observations were made on the twenty patients with rheumatic heart disease, mitral insufficiency and mitral stenosis: 1. The right ventricle was enlarged, owing to dilatation and hypertrophy of the inflow tract, and elongation and widening of the outflow tract. 2. The pulmonary artery was dilated and alone produced the prominent pulmonary arc in the frontal view; the conus arteriosus formed no part of it. 3. The accentuated hilar and parenchymal shadows were caused by engorged pulmonary blood vessels, and the pulmonary veins, not the left atrium, produced the elevation and stenosis of the left bronchus. 4. The left atrium was enlarged predominantly toward the right; the main body never reached to the left cardiac border in the frontal view, although its auricula not infrequently was visible below the pulmonary arc.

Three different types of syphilitic cardiovascular disease have been studied in eighteen cases: aortitis, aneurysm of the aorta and aortic insufficiency with left ventricular enlargement and dilatation. In the five cases of aortic insufficiency without circulatory failure there was generalized aortic dilatation most marked in the ascending aorta, and marked dilatation and hypertrophy of the left ventricle. Aneurysm of the aorta was demonstrated in eight instances, in three of which it had previously been unrecognized. In one unusual case, two aneurysms were discovered: the first one a fusiform dilatation of the ascending aorta, and the second a saccular aneurysm of the descending aorta. In six cases presenting syphilis, hypertension and widening of the supracardiac shadow, dilatation of the aorta was excluded and the apparent dilatation shown to be due to enlargement of the aortic arch from "uncoiling" in two instances, while aortic aneurysm was proved in the remainder. Rounded shadows at the left hilus had been diagnosed as aortic aneurysm and neoplasm respectively in two cases of syphilis, but instead they were found to be aneurysms of the pulmonary artery and its main branches (figs. 3, 4 and 5).

In our eleven cases of hypertensive heart disease without cardiac failure there were moderate enlargement of the left ventricular cavity and wall and varying degrees of tortuosity, "uncoiling" and dilatation of the aorta. In one case these changes in the aorta were sufficiently marked to warrant the roentgenographic diagnosis of aneurysm, although it was later established by visualization that the prominence of the ascending aorta was due primarily to "uncoiling," in small part to dynamic dilatation. The arteries arising from the arch were generally found to be dilated and tortuous, and in one instance "buckling" of the innominate artery was discovered.

There was little demonstrable cardiac change but a pronounced degree of aortic disease in the eight cases of arteriosclerotic cardiovascular disease in which there had been neither hypertension, circulatory failure nor coronary thrombosis; the arteriosclerotic aorta was characterized by calcification and thickening of the wall, widening of the aortic arch due to elongation and "uncoiling," and elevation of the arch. By visualizing the lumen it was possible to demonstrate the intimal location of the aortic calcification and thereby verify the fact that the shadow which we had previously attributed to the aortic wall actually represented it.

Fig. 2 (O. C.).—Malignant mediastinal neoplasm. Contrast roentgenogram, frontal position, three and one-half seconds after beginning of injection. Axillary, subclavian and innominate veins, superior vena cava, right atrium, right ventricle with conus arteriosus, pulmonary artery and main branches opaque. Collateral circulation around shoulder girdle, intercostal veins, right internal mammary and azygos vein also outlined. Note irregularity and displacement of innominate vein and reversed direction of blood flow through the azygos, internal mammary and intercostal veins, indicated by arrows. In these illustrations *IV* indicates innominate vein; *AzV*, azygos vein; *SVC*, superior vena cava; *RA*, right atrium; *RV*, right ventricle; *PA*, pulmonary artery; *RPA*, right pulmonary artery; *LPA*, left pulmonary artery.

There was generalized cardiac enlargement and a large aneurysm of the left ventricle in our one patient who had had myocardial infarction previously. Although the inside of the aneurysmal sac could not be visualized, probably because it was filled with clotted blood, the left ventricular cavity was dilated and the ventricular wall from the aneurysm to the apex was extremely thin.

There were two cases of chronic constrictive pericarditis. In the first case in which there was auricular fibrillation, the pericardium had been partially resected previously with temporary improvement, but because peripheral circulatory failure had recurred constriction of the pulmonary artery or of the pulmonary conus was suspected. Visualization, however, showed no stenosis but instead dilatation of the right ventricle and the left atrium, so that further

19. Nicolson, G. H. B.: Coarctation of the Aorta in a Child with Arrested Subacute Bacterial Endarteritis and Calcified Mycotic Aneurysm at the Seat of Stricture, to be published.

surgery was obviated. In the second case cirrhosis of the liver or constrictive pericarditis was suspected. Tremendous enlargement of the innominate vein and the superior vena cava and pronounced slowing of the blood flow into the heart supported the latter diagnosis, which was subsequently confirmed at operation and necropsy. Tuberculous pericarditis with effusion was suspected in another case, but the diagnosis could not be confirmed because there was no evidence of cardiac tamponade or failure; the electrocardiogram was normal and the roentgenkymogram and the pericardial tap were inconclusive. The presence of an effusion was proved beyond reasonable doubt, however, by demonstration of the normal size of the cardiac chambers and the tremendous thickening of the surrounding cardiac shadow.

Lung Disease.—Cardiovascular changes were also found in pulmonary disease. In our thirty-nine cases of tuberculosis the changes in the pulmonary circulation consisted of three main types: (1) diminished vascularity resulting from the narrowing and obliteration of blood vessels in the exudative tuberculosis and by the fibrosis in the productive type, (2) gross displacement of the intrathoracic cardiovascular structures by extensive pulmonary fibrosis ("fibrothorax"), and (3) displacement and stenosis of the pulmonary artery by tuberculous adenitis. The cardiovascular changes occurring in "fibrothorax" and the impossibility of recognizing them without visualization are demonstrated in figures 6, 7 and 8. In the conventional roentgenogram the heart and the great vessels could not be distinguished at all, but with visualization these structures and their gross anatomy were outlined. Following pneumothorax in thirteen cases and thoracoplasty in six others, changes in both the peripheral vascular tree and the larger arterial divisions occurred, consisting mainly of avascularity of the collapsed lobes and displacement and rotation of the pulmonary artery and its branches at the hilus.[20]

Enlargement of the right ventricle and the pulmonary artery with its branches was observed in the three cases presenting advanced bronchiectasis, and there was also a striking decrease in the blood supply to the diseased area. In both bullous (two cases) and generalized emphysema (seven cases) there was diminished vascularity to the involved regions. The main branches of the pulmonary artery at the hili and in the lower lobes were enlarged, forming the so-called moustache, while in the midzone and outer zones, the vessels became small and wirelike. In five instances of primary carcinoma of the bronchus there was a decrease in the size and number of the blood vessels to the affected lobes. This, we believe, was due either to obliteration of the vessels by the suppurative process or to narrowing of the lumen from compression by the primary tumor or from metastases to neighboring lymph glands.

COMMENT

Our method of visualizing the anatomy of the heart and the thoracic blood vessels is unique, differing from preceding attempts in the completeness with which the cardiovascular structures are revealed and in the specialized technics used to secure opacification and roentgenography. These technical procedures are largely the result of applying a practical knowledge of the anatomy and the physiology of the circulation to the field of contrast cardiac roentgenography.

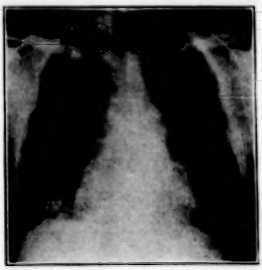

Fig. 3 (A. W., aged 57).—Aneurysm of pulmonary artery, syphilis, silicosis. Note generalized mottling due to silicosis particularly prominent at the bases, small bulla at right apex with fibrotic strands extending below first rib anteriorly, fracture of fifth rib posteriorly and prominent rounded mass at left hilus. Moderate increase in transverse diameter of heart and of aortic arch. (From the Tuberculosis Service of Bellevue Hospital.)

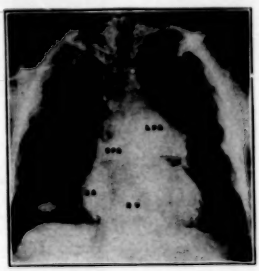

Fig. 4 (A. W.).—Aneurysm of pulmonary artery; syphilis; silicosis. Contrast roentgenogram at four and one-half seconds. Superior vena cava, right atrium, right ventricle, pulmonary artery, right pulmonary artery and left pulmonary artery and their branches opaque. Note aneurysm of pulmonary artery with enlargement of both branches, particularly the left, accounting for double bulge at hilus in conventional roentgenogram. Hilar subdivision increased in size and prominence, whereas vessels in outer and midzones are decreased, characteristic of pulmonary fibrosis.

Fig. 5 (A. W.).—Aneurysm of pulmonary artery and main branches; syphilis; silicosis. Contrast roentgenogram, left anterior oblique position at five seconds. Superior vena cava, right atrium and pulmonary artery with right and left branches filled. Note dilatation of pulmonary artery and right branch (seen on end) and enormous aneurysm of left branch filling aortic window.

We believe that our method of cardiovascular visualization is sound in principle and that it is now past the experimental stage. No serious effect has followed 486 injections in 233 cases, although mediastinal, heart or lung disease was present in the majority. The reaction to the injection is slight, and the organic iodide compound diodrast is promptly eliminated by the kidneys without change. The procedure does not require costly new apparatus and so can be performed in the average x-ray laboratory. The patients may be ambulatory, since after-care is unnecessary. Contrary to earlier opinion, we now believe that the procedure is more difficult to perform than most diagnostic tests. The technic is exacting, requiring dexterity, precision, speed, team work and strict adherence to detail. Proficiency in the procedure however, can be readily acquired through training and practice, and successful performance should be within the capability of every medical center.

20. Steinberg, Israel; Robb, G. P., and Roche, U. J.: A Visualization Study of the Circulatory Changes Resulting from the Collapse Therapy of Pulmonary tuberculosis, to be published.

Cineroentgenography of the heart and the thoracic blood vessels during opacification [25] has recently been carried out and shows graphically the cardiovascular anatomy, the changes occurring with the heart beat and the course and the velocity of the blood flow. Roentgenkymography during opacification [26] has been of value in identifying the structures causing external cardiovascular pulsations and in demonstrating intracardiac motion. By its use greater accuracy in measuring the cardiac output by roentgenkymography [27] should be possible because the true cardiac border can be defined and both ventricles visualized.

Detailed cardiovascular visualization has already proved its worth in clinical medicine and in the teaching of medicine and the anatomy, pathology and physiology of the circulation. A summary of its value in mediastinal, heart and lung diseases was given in the preceding section. By its use the mediastinal contents are divided in two main groups—the vascular and the nonvascular structures. Then the various components of the cardiovascular system are identified, and the location and the degree of gross abnormality ascertained. Nonvascular disorders such as neoplasm, cyst and tuberculous adenitis can be detected or better defined by the vascular derangement they produce. Most frequently there has been compression and displacement of the superior vena cava and the innominate veins, but the pulmonary blood vessels, the aorta and the heart have also been involved. By knowing the points of involvement of the cardiovascular system, which extends widely through the superior, the middle and the posterior parts of the mediastinum, one can map out the approximate size and configuration of the mediastinal mass. This method of delineation is illustrated by figures 1 and 2.

In cardiovascular disease, this method has given a degree of precision in diagnosis previously unattainable. The single cardiac silhouette has been divided into its four constituent chambers, and blood vessels previously seen indistinctly have become visible. As a result, surmise regarding the chambers of the heart, the pulmonary circulation and the great vessels during life can be replaced largely by fact. The size, the shape and the location of each gross anatomic division can be determined and the site and the degree of abnormality ascertained. Instead of using arbitrary diameters in cardiac mensuration which frequently have no anatomic counterpart, one can now measure the actual length, depth and breadth of the heart and, more important, the dimensions of the chambers, the thickness of their walls and the diameter and length of the large blood vessels. Determination of the volume of the heart should consequently be more accurate. It is even conceivable that a practical index of the cardiac weight may ultimately be obtained by subtracting the combined volumes of the chambers from the total cardiac volume and multiplying the result by the average specific gravity of the heart. Finally, the circulation time to each major subdivision of the intrathoracic cardiovascular system can be measured objectively, and with the same injection the peripheral arterial rate of blood flow [29] can be determined subjectively by the sensation of heat that spreads throughout the body.

Fig. 6 (J. D., aged 20).—Massive unilateral pulmonary fibrosis ("fibrothorax") due to tuberculosis. Conventional roentgenogram. Entire left side of chest obscured by extensive pulmonary tuberculosis. Note cavities below clavicle, displacement of trachea and other mediastinal structures, and impossibility of distinguishing heart. Right side of chest clear save for productive tuberculosis at right apex and first interspace. (From the Tuberculosis Service of Bellevue Hospital.)

Fig. 7 (J. D.).—Tuberculous "fibrothorax." Contrast roentgenogram three seconds after beginning of injection. Entire right side of heart visualized: left cephalic, axillary, subclavian and innominate (in part) veins, superior cava, right atrium, right ventricle, pulmonary artery, right pulmonary artery and branches are opaque. Left subclavian and innominate veins (indicated by white arrow) kinked and foreshortened, and superior vena cava displaced to left of spine. Entire heart rotated toward left axilla, giving view ordinarily seen in right anterior oblique position of thorax. Two pulmonic cusps and sinuses are indicated by outer black arrow. Note dwarfed receding left branch of pulmonary artery seen on end (upper black arrow) and avascularity of left lung, contrasting strikingly with normal right pulmonary artery and rich vascular network of right lung.

Fig. 8 (J. D.)—Tuberculous "fibrothorax." Contrast roentgenogram at eight seconds. Entire left side of heart visualized: left atrium (*LA*), left ventricle (*LV*), entire thoracic aorta (*Ao*), with its branches from arch, and abdominal aorta are opaque. Note two cusps and corresponding sinuses of aortic valve and innominate artery (*AI*) dividing into right common carotid and subclavian branches; on the left side left common carotid and more medial left vertebral arteries are indicated by vertical arrows and left subclavian and axillary arteries by horizontal arrow.

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The most striking results are obtained in disorders such as aneurysm of the pulmonary artery, aortic disease, pericardial and congenital abnormalities in which recognition is difficult or impossible with conventional methods of study. The importance of accurate diagnosis in such cases becomes apparent when one realizes

25. Stewart, W. H.; Robb, G. P.; Steinberg, Israel; Roche, U. J., and Breimer, C. W.: Cineroentgenoscopy of the Chambers of the Heart, the Pulmonary Circulation and the Great Blood Vessels, read before the fortieth annual meeting of the American Roentgen Ray Society, Chicago, Sept. 19-22, 1939; to be published.

26. Robb, G. P.; Steinberg, Israel, and Roche, U. J.: Contrast Roentgenkymography of the Cardiovascular system, unpublished data.

27. Keys, Ancel, and Friedell, H. L.: Measurement of the Stroke Volume of the Human Heart from Roentgenograms; Simultaneous Roentgenkymographic and Acetylene Rebreathing Experiments, Am. J. Physiol. **126**: 741 (July) 1939. Ungerleider, H. E., and Gubner, Richard: Teleoroentgenkymography: Its Application to the Study of Heart Size, Output and Aortic Elasticity, Radiology **33**: 497 (Oct.) 1939.

29. Spier, L. C.; Wright, I. S., and Saylor, Leslie: A New Method for Determining the Circulation Time Throughout the Vascular System, Am. Heart J. **19**: 511 (Nov.) 1936.

that excision of an aneurysm of the pulmonary artery wrongly diagnosed as neoplasm has been attempted,[30] once with fatal results.[31] Likewise, the differentiation of neoplasm and aortic aneurysm is of vital importance in the presence of bronchostenosis and pulmonary suppuration, because excision or irradiation may be indicated in the first case and antisyphilitic treatment and wiring of the aneurysm [32] in the second one. Another use may be the exclusion of other congenital lesions of patients with patent ductus arteriosus for whom ligation of this vessel is proposed.[33]

In the lungs, visualization reveals intrinsic abnormality of the pulmonary blood vessels and also the changes caused by pulmonary disease. The greatest value of this method is in disorders near the hilus, which are notoriously difficult to diagnose. Enlarged lymph nodes, cysts and neoplasms can be differentiated from the hilar blood vessels and a clearer idea of their location and configuration gained from the vascular compression and displacement which they produce. Aneurysms of the pulmonary arterial tree can now be distinguished with certainty and differentiated from the nonvascular mass with transmitted pulsation which may simulate aneurysm. Rounded opacities not infrequently mistaken for calcified lymph nodes are shown to be arteries seen on end.

The diagnosis of parenchymal disease can usually be made by ordinary methods of study; but even in these obvious disorders we have found visualization worth while, for it brings out strikingly the pathologic changes in the pulmonary circulation and so presents a clearer picture of the primary disease. In cases of tuberculosis, fibrosis, emphysema, chronic pulmonary suppuration, cyst or neoplasm there is a decrease in the vascularity to the involved regions, while in other portions there appears to be an increase in the size and number of blood vessels (figs. 6, 7 and 8). This method has been of no value in the diagnosis of early tuberculosis or cavitation. It may, however, reveal the presence of hilar or mediastinal metastases too small to be detected otherwise in a case of primary carcinoma of the bronchus and so prove the case inoperable. In many instances of so-called peribronchial fibrosis the lung markings were shown to be due to normal pulmonary blood vessels instead of disease, and the increased lung markings in mitral stenosis and left ventricular failure which may be mistaken for tuberculosis or fibrosis are primarily due to dilatation of the pulmonary blood vessels.

In undergraduate and postgraduate teaching, the chief value of the method lies in its application to the basic sciences of anatomy, pathology and physiology and to the clinical subjects of roentgenology and medicine. In the past, the gross anatomy and pathology of the cardiovascular system have been taught chiefly by anatomic dissection and postmortem roentgenographic studies in which there has necessarily been great distortion. For this reason it has been difficult for the student to form a true picture of the heart and the blood vessels during life and to understand their relationships to one another and to adjacent organs. The use of contrast roentgenograms showing the location, size and shape of the superior vena cava and its tributaries, the chambers of the heart, the walls and the valves, the pulmonary blood vessels and the aorta with its branches in health and in disease would simplify and enrich the teaching of these subjects. Contrast roentgenography likewise opens a new field for the study of cardiovascular physiology which heretofore has been based chiefly on animal experimentation supplemented by such indirect studies in man as electrocardiography, roentgenography and measurement of venous and arterial blood pressures and of the rate of blood flow. Now, however, both internal and external cardiac motion and the vascular pulsations occurring in the cardiac cycle can be studied in both animal and man.

The knowledge gained by this method will be useful for the instruction of the general practitioner as well as the specialist in roentgenology, heart disease and diseases of the chest. To the busy practitioner with limited time for postgraduate study, this method not only simplifies roentgenographic interpretation but also shows him gross pathologic changes in the living and so enables him to obtain a grasp of the fields of cardiac and pulmonary diseases which were previously beyond his reach. Since the use of fluoroscopy is becoming general, a knowledge of the structures responsible for the cardiovascular and pulmonary shadows in health and disease is necessary if errors are to be avoided and the maximal value of this diagnostic procedure secured. To the specialist, visualization offers a unique method of learning the anatomy and the pathologic conditions of the cardiovascular system by the study of roentgenograms showing normal structure and the changes in disease, supplemented by visualization studies of his own patients presenting diagnostic problems. Although roentgenology has long been known as "pathology in the living," it has heretofore given an inadequate insight into the condition of the heart and of the thoracic blood vessels. Now this term is more truly applicable in thoracic disease because contrast roentgenography reveals the gross anatomy of the heart and of the thoracic blood vessels, which previously could be learned only at necropsy.

SUMMARY AND CONCLUSIONS

Our method of visualizing the chambers of the heart, the pulmonary circulation and the great blood vessels in man consists of two parts: (1) the rapid intravenous injection of enough radiopaque solution (diodrast 70 per cent) to make the interior of the heart and of the thoracic blood vessels opaque to the roentgen ray, and (2) roentgenography of these structures at the time of their opacification. Specialized technics are necessary in both opacification and roentgenography.

The method is safe and practical. No serious consequence has followed 486 injections of 233 patients, many of whom were seriously ill. The usual reaction to the injection is mild and transient, and severe reactions are rare. The compound diodrast has negligible toxicity and is excreted rapidly and completely by the kidneys. This procedure does not require expensive new apparatus and can be performed in the average roentgenographic laboratory. Success demands a high degree of teamwork and precision and rigid adherence to the technic in all details.

The following conclusions seem warranted:

1. Our method of visualizing the chambers of the heart, the pulmonary circulation and the great blood vessels in man is safe and practical.

30. Boyd, L. J., and McGavack, T. H.: Aneurysm of the Pulmonary Artery: A Review of the Literature and Report of Two New Cases, Am. Heart J. **18**: 562 (Nov.) 1939.
31. Wahl, H. R., and Gard, R. L.: Aneurysm of the Pulmonary Artery, Surg., Gynec. & Obst. **68**: 1129 (June) 1931.
32. Blakemore, A. H., and King, B. G.: Electrothermic Coagulation of Aortic Aneurysms, J. A. M. A. **111**: 1821 (Nov. 12) 1938.
33. Gross, R. E., and Hubbard, J. P.: Surgical Ligation of a Patent Ductus Arteriosus, J. A. M. A. **112**: 729 (Feb. 25) 1939. Gross, R. E.: New England J. Med. **220**: 510 (March 23) 1939.

2. It provides vital information regarding these structures and other thoracic organs not obtainable by any other means.

3. This information is of practical value in the diagnosis, the prognosis and the treatment of mediastinal, heart and lung diseases.

477 First Avenue.

THE SYNERGISM OF PHENOBARBITAL, DILANTIN SODIUM AND OTHER DRUGS

IN THE TREATMENT OF INSTITUTIONAL EPILEPSY

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Pharmacologically the history of the treatment of epilepsy may be divided into several epochs. The first, which was inaugurated in 1853, lasted until the introduction of phenobarbital and may be called the era of the bromide treatment. Bromides undoubtedly reduced the epileptic attacks but on the whole did not represent a very efficient form of therapy, and their effective use was hindered by the frequent occurrence of bromidism.

The second era came with the introduction of phenobarbital in 1912. The profession recognized that this drug was more successful than bromides in the treatment of epilepsy, and in a short time bromides receded to a position of secondary importance.

The third era is very recent in origin and is characterized by the introduction in 1938 of dilantin sodium by Merritt and Putnam,[1] whose work established the specific value of this drug.

It is certain that there is no unified condition which can be called epilepsy. It has long been known that the convulsive syndrome not only comes without known cause (the so-called idiopathic epilepsy) but is often a concomitant of infectious diseases, kidney damage and organic disease of the brain due to such conditions as syphilis, arteriosclerosis and brain tumor. In other words, there are various avenues of causation. On a theoretical basis, therefore, there should be different avenues of therapeutic approach, and even where the etiology is unknown it seemed to us that a synergistic approach to the pharmacologic treatment of epilepsy would be of value.

EXPERIENCE WITH PHENOBARBITAL

Phenobarbital Alone.—At the beginning of this research, over two years ago, the patients who were institutionalized at the Grafton State Hospital were treated almost entirely with phenobarbital in what we now recognize to have been inadequate dosage. By what we call "central control," namely the handling of all patients by a few physicians rather than by the individual physicians in charge of their respective services, the dosage of phenobarbital was raised in each case in accordance with the number and the time of occurrence of the epileptic attacks.

Such increases in dosage were made until it was evident in each case that phenobarbital had reached the limit of usefulness and that further increase could not reduce seizure incidence. By this use of phenobarbital alone we were able to effect improvement in 89 per cent of all patients treated, with a total seizure reduction of 68 per cent.

The average daily dose of phenobarbital used was 2.9 grains (0.188 Gm.) per patient, ranging from 1.0 to 8.0 grains (0.06 to 0.52 Gm.) a day. Detailed results of this treatment have been published elsewhere.[2] We recapitulate some of the observations in order to compare them with the effects of the synergistic treatment to be described later.

We had observed that epileptic patients show individual rhythms with fair constancy: annual seizure rates (under unchanged medications) tended to approximate one another, and loads of seizures seemed to favor set periods of the day. Accordingly after data were reviewed each week or two the dose of phenobarbital immediately prior to the individual seizure peak was increased by from one half to 1 grain (0.03 to 0.06 Gm.) until it was evident that further increase was without benefit. In this way we achieved what we conceived to be the most favorable therapeutic levels with phenobarbital.

The following remarks may be made about the use of phenobarbital in epilepsy: Phenobarbital appears to exercise diffuse antiepileptic effect with benefits manifested in every hour period of the day even though it is given only a few times daily. This is probably due to accumulation of the drug in the body and its gradual excretion, the reservoir level being maintained by continued medication.

It appears from our studies that there is an optimal dosage of phenobarbital beyond which no benefit is obtained by increasing the dosage. When administered to patients who are inadequately treated, it exerts a rapid and sustained beneficial effect. As the level of dosage is raised arbitrarily, most of these patients tolerate the drug without untoward effect but additional antiepileptic benefit is not observed.

This point is demonstrated in table 1 by the record of twenty patients whose expectancy of seizures on the basis of the previous two years was 427 in ten weeks.

We find no support for the opinion so far expressed to the effect that the dose of phenobarbital must be regularly increased in order to obtain therapeutic benefits. Our observations, as presented in table 2, involve thirty unselected cases over four periods of ten weeks each, during which the dosage of the drug remained unchanged.

Toxicology of Phenobarbital and the Use of Amphetamine (Benzedrine) Sulfate.—We wish to present certain facts on the toxicology of phenobarbital and the value of amphetamine sulfate in its treatment. Toxic symptoms were surprisingly low in this group of patients. Of the 144 patients under treatment in this series, seventy-two received daily totals of 3 grains (0.2 Gm.) or more of phenobarbital daily. Of this series one case presented symmetrical dermatitis of the hands which disappeared within two weeks when the drug was discontinued and reappeared when medication was

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Parke, Davis & Co. furnished the dilantin sodium used in these experiments; Smith, Kline & French Laboratories supplied the amphetamine sulfate.

From the Grafton State Hospital, North Grafton, Mass., and the Division of Psychiatric Research, Boston State Hospital, aided by grants from the Commonwealth of Massachusetts and the Rockefeller Foundation.

1. Merritt, H. H., and Putnam, T. J.: Sodium Diphenyl Hydantoinate in the Treatment of Convulsive Disorders, J. A. M. A. 111:1068 (Sept. 17) 1938.

2. Cohen, Benjamin, and Myerson, Abraham: The Effective Use of Phenobarbital and Benzedrine Sulfate (Amphetamine Sulfate) in the Treatment of Epilepsy, Am. J. Psychiat. 98:371-393 (Sept.) 1938.

resumed. There were nineteen cases of drowsiness, in some instances with associated unsteadiness or functional ataxia. This unsteadiness was associated with drowsiness and a feeling of dizziness and does not represent true ataxia. So far as we know, there are no ways of predicting which patients will show drowsiness or unsteadiness. Despite the fact that phenobarbital is excreted by the kidneys and impaired kidney function might be expected to produce phenobarbital poisoning,[3] we found no such correlation in our series.

That the toxic symptoms are due to some idiosyncrasy is indicated by table 3, which shows that they occur without definite relationship to the dosage.

In our previous paper we pointed out that amphetamine sulfate is valuable in counteracting the drowsiness and unsteadiness of phenobarbital. One of the main characteristics of this drug is its effect on drowsiness and sleep. It effectively dissipates the drowsiness and sleepiness of phenobarbital without in any way affecting the epileptic attacks, although in one instance it seems to have exerted a favorable influence. In general it may be stated that it neither increases nor decreases the epileptic attacks by itself.

On the basis of this action of amphetamine sulfate, we administered it in doses of from 5 to 25 mg. daily to patients who showed drowsiness with or without unsteadiness. Although phenobarbital dosage remained unchanged, the drug cleared up these symptoms in most cases within a day.

In order to determine the safety of such supplementary medication, we continued administration of amphetamine sulfate for an average period of seventeen weeks. The results, so far as attacks were concerned, were practically unchanged, although the group as a whole improved markedly with regard to drowsiness and general alertness. One patient, who had been receiving 5 grains (0.32 Gm.) of phenobarbital a day without benefit, improved markedly after amphetamine medication was started (table 4).

During the past forty-two weeks this patient has not been receiving amphetamine, and her seizure incidence in this period has been 0.1 seizure per week.

TABLE 1.—*Effects of Mounting Phenobarbital Dosage*

Time, Ten Week Period	Average Daily Dose of Phenobarbital, Grains	Total Seizures in Ten Weeks
1st	2.3	118
2d	3.2	108
3d	3.6	97
4th	3.7	100
5th	3.8	102

TABLE 2.—*Effect of Unchanged Phenobarbital Dosage*

Time, Ten Week Period	Total Seizures
1st	91
2d	67
3d	79
4th	73

Most of our patients lost weight, the loss ranging between 3 and 19 pounds (1.3 and 8.6 Kg.), the average being 6⅘ pounds (2.9 Kg.). The weight loss occurred during the period of amphetamine medication, which averaged seventeen weeks.

To summarize, amphetamine sulfate is of real value in the treatment of the drowsiness and unsteadiness consequent on phenobarbital medication. The dosage of phenobarbital may be maintained during the period of amphetamine medication, and thus the penalty of increased attacks attendant on discontinuing phenobarbital or lessening its dosage is avoided. Another point which bears on the hypothesis raised by Merritt and Putnam is pertinent at this time. It is apparently not the hypnotic effect of phenobarbital which is of value in the treatment of epilepsy, since this hypnotic effect may be eliminated by the use of amphetamine, and yet the seizure incidence is favorably affected.

TABLE 3.—*Relationship Between Phenobarbital Dosage and Incidence of Toxic Features*

Daily Amount of Phenobarbital, Grains	Number of Patients Receiving This Dose	Number of Patients Showing Drowsiness With or Without Unsteadiness
1½	16	2
2	26	4
3	29	3
3½	11	2
4	11	2
4½	12	2
5	8	2
5½-7	10	2

TABLE 4.—*Apparent Reduction of Seizures by Supplementary Amphetamine Sulfate in a Patient Refractory to Phenobarbital*

Daily Medication		Number of Weeks	Seizures per Week
Phenobarbital, Grains	Amphetamine, Mg.		
5	0	7	10.8
5	10	8	1.8
5	20	27	0.07

DILANTIN SODIUM

In 1938 Merritt and Putnam described the value of dilantin sodium, a derivative of glycolyl urea, in the treatment of epilepsy in patients who derived little or no benefit from the usually accepted treatments (with bromides, phenobarbital, ketogenic diet, restricted fluid intake and other means). Using doses ranging from 0.3 to 0.6 Gm. a day for 142 patients, they found that the attacks were completely relieved in 58 per cent and greatly decreased in frequency in an additional 27 per cent.

Our studies of the effect of this drug may be divided into two parts, with (1) dilantin sodium replacing phenobarbital and (2) dilantin sodium and phenobarbital in combination.

Dilantin Sodium Replacing Phenobarbital.—Eighteen patients who were receiving optimal doses of phenobarbital were given supplementary dilantin sodium for five weeks. The amount of phenobarbital received was unchanged during this time.

It will be observed in table 5 that during the preceding five weeks (when they received phenobarbital alone) the total number of seizures was forty-one; while in the five weeks in which they received supplementary dilantin sodium they had nineteen seizures, a reduction of 54 per cent. Five patients were improved under supplementary dilantin sodium medication (total decrease of twenty-eight seizures mainly due to benefit in two of these patients); four patients had more seizures (total increase of only six seizures), and nine

3. Weiss, Soma: The Clinical Use and Dangers of Hypnotics, J. A. M. A. **107**: 2104 (Dec. 26) 1936.

patients, who were free from seizures with phenobarbital alone, remained seizure free after dilantin sodium had been added.

In the succeeding three weeks phenobarbital for this group was gradually discontinued entirely; then

TABLE 5.—*Effect of Addition of Dilantin Sodium to Existing Phenobarbital Medication*

Patient	Seizures with Phenobarbital Alone, First 5 Week Period	Seizures with Phenobarbital and Dilantin Sodium, Second 5 Week Period
H. B.	0	0
J. B.	0	0
C. C.	0	-
W. D.	2	0
P. D.	0	0
L. P.	0	0
D. H.	0	0
W. K.	1	3
D. L.	25	9
A. L.	0	1
M. L.	0	0
M. R.	0	0
S. R.	0	2
J. W.	6	4
H. W.	0	0
S. B.	6	0
M. G.	1	0
M. S.	0	0
Total	41	19

followed twenty weeks when dilantin sodium was administered, the maximal dose being six capsules (each containing 0.1 Gm. of the drug) daily for each patient.

It will be noticed in table 6 (which compares seizure totals in this twenty week period with those in the preceding period of twenty weeks with phenobarbital alone) that dilantin sodium is an inadequate substitute for adequate phenobarbital. In the twenty weeks in which these patients received dilantin sodium alone they had a total increase of 203 seizures as compared with the number of seizures when they received phenobarbital alone: Four patients who had been seizure free while given phenobarbital had a total of fifteen seizures in the twenty week period while they were receiving dilantin sodium alone. Fourteen patients (including the four already mentioned) had more seizures with dilantin sodium (total increase of 208 seizures in twenty weeks with dilantin sodium alone). One patient had one seizure in each of these periods. Three had fewer seizures (total decrease of five seizures) with dilantin sodium alone than with phenobarbital alone.

TABLE 6.—*Effect of Total Replacement of Phenobarbital by Dilantin Sodium as Indicated by Seizure Totals*

Patient	Comparison of Periods of 20 Weeks Each: Seizures with Phenobarbital Alone	Seizures with Dilantin Sodium Alone
H. B.	5	21
J. B.	0	1
C. C.	0	6
W. D.	4	28
P. D.	2	0
L. P.	0	2
D. H.	4	5
W. K.	6	28
D. L.	158	220
A. L.	1	1
W. L.	10	16
M. R.	1	6
S. R.	0	6
J. W.	21	19
H. W.	3	2
S. B.	5	12
M. B.	7	34
M. S.	2	3
Total	309	412

The next step was return of these patients to phenobarbital medication. All these patients continued to receive six capsules (0.1 Gm. each) of dilantin sodium daily. When two successive periods of seven weeks each were subsequently compared it was found that resumption of phenobarbital medication effected improvement in ten cases with a total decrease of 239 seizures; five patients who had been seizure free with dilantin sodium remained seizure free, and two patients were unaffected. None showed untoward results. The total reduction of seizures effected by the addition of phenobarbital to existing dilantin sodium therapy was 89 per cent. The greatest change was noted in patient A. L., whose seizures dropped from 166 to seven. With his data excluded from the totals it is found that the remainder of the group experienced 79 per cent reduction of seizures. Details are recorded in table 7.

Dilantin Sodium and Phenobarbital (Twenty-Three Patients).—This phase of our study with a separate group of patients confirms the existence of synergism between phenobarbital and dilantin sodium.

TABLE 7.—*Effect on Seizures of the Restoration of Phenobarbital to Patients Receiving Dilantin Sodium*

Patient	Comparison of Two Successive Periods, 7 Weeks Each: Seizures with Dilantin Sodium Alone	Seizures with Dilantin Sodium and Phenobarbital
H. B.	8	3
J. B.	0	0
W. D.	26	6
P. D.	0	0
L. P.	2	0
D. H.	1	0
W. K.	24	7
D. L.	166	7
A. L.	0	0
M. L.	2	0
M. R.	3	0
S. R.	3	0
J. W.	2	2
H. W.	1	1
S. B.	0	0
M. G.	29	3
M. S.	0	0
Total	267	29

The patients in this series were receiving heavy doses of phenobarbital and it was evident that additional increases of this drug would be without benefit. Consequently the phenobarbital dosage was retained without change and supplementary dilantin sodium was used.

The average period during which supplementary dilantin sodium was used was twenty-five weeks. The average dose of phenobarbital per patient was 4 grains (0.26 Gm.). The average maximum dose of dilantin sodium was 0.3 Gm. (4½ grains) daily. The total number of seizures during the period of phenobarbital plus dilantin sodium was 330 by direct count and the total number of seizures in an exactly equal period while patients were receiving phenobarbital without dilantin sodium was 662. The reduction of seizures by the added dilantin sodium amounted to 50 per cent and twenty-two of the twenty-three patients in this series showed improvement. These data are in agreement with those observed in the first part of this study, when the administration of dilantin sodium in addition to the existing phenobarbital medication over a period of five weeks reduced the total seizure incidence 50 per cent.

It will also be noted that our clinical results with a combination of phenobarbital and dilantin sodium were far superior to those observed when dilantin sodium was used alone (although the maximum dose of dilantin sodium in the latter instance was 0.6 Gm. a day in contrast to an average maximal dose of 0.3 Gm. in the former instance). Individual and group data are listed in detail in table 8.

Toxicology of Dilantin Sodium.—Most of the toxic features observed occurred in the group of patients for whom replacement of phenobarbital by a maximum dose of 0.6 Gm. of dilantin sodium daily was attempted.

One patient refused further dilantin sodium after a short trial, saying "It dazed me, upset my stomach as though I had indigestion and made me dopey all the time." (He was dropped from the study.) Five of the forty-one patients who received dilantin sodium became drowsy and unsteady after dilantin sodium dosage had reached its peak, and bed care became necessary. Medication consisted of administering from 30 to 40 mg. of amphetamine sulfate in divided doses over a period of two days. In most cases drowsiness was relieved the first day and difficulty of gait by the second day. The dilantin sodium dosage remained unchanged throughout this period.

LAXATIVE DRUGS

In a previous paper we mentioned the omission in a series of cases of the old routine administration of magnesium sulfate by mouth twice weekly in the treatment of epilepsy. For this group we also discontinued intestinal lubricants, enemas and all other laxatives. This program has been in effect about a year, and throughout that time these patients have continued to receive adequate phenobarbital. We now confirm our original impressions and wish to point out that the elimination of routine laxatives has been followed by neither gastrointestinal difficulties nor increase of seizures.

TABLE 8.—*Comparative Effects of Phenobarbital Alone and Phenobarbital in Combination with Dilantin Sodium During Equivalent Periods*

Patient	No. of Weeks in Each Period	Seizure Totals		Daily Dose	
		Phenobarbital Alone	Phenobarbital and Dilantin Sodium	Phenobarbital, Grains	Maximal Dilantin Sodium, Gm.
J. B.	26	15	1	5½	0.2
J. S.	37	145	128	7	0.5
E. C.	28	18	15	3½	0.3
W. G.	40	42	10	6	0.3
L. L.[5]	36	24	15	5½	0.3
B. P.	30	18	12	3½	0.4
J. A.	29	7	4	3½	0.3
P. E.	26	17	0	3	0.2
M. O.	24	13	0	2½	0.2
A. P.	26	8	3	3½	0.3
A. S.	18	5	1	4½	0.2
C. M.	28	4	0	5½	0.2
M. S.	30	17	15	2	0.4
N. H.	25	29	19	3½	0.4
M. W.	20	37	31	4	0.4
R. V.	30	43	25	4	0.4
A. S.	26	42	1	5	0.2
M. D.	24	13	2	2	0.3
A. H.	28	81	22	4	0.3
C. C.	26	11	16	5	0.3
M. F.	8	27	11	3	0.3
E. E.	28	36	0	3½	0.2
F. B.	8	5	1	3	0.2
Averages and seizure totals	25	602	330	4	0.3

[5] On account of a cutaneous idiosyncrasy this patient was receiving bromides instead of phenobarbital.

COMPARATIVE AND GENERAL EFFECTS OF THE DRUGS USED

In table 9 we compare the percentage reductions of seizures produced by the various drugs.[4]

By comparing total hospital seizure incidence in the past one and one-half years with the number of attacks expected on the basis of record, we estimate that we have spared our patients over 8,000 seizures by our various therapeutic programs (a reduction of 71 per cent). This great reduction has been paralleled by an improvement in the whole atmosphere of the wards in which these patients are confined. Accident incidence, previously high, has been lowered to the point of infrequency. The patients have become easier to handle, and in consequence privileges have been increased. Many of them have been able to achieve residence in more desirable wards and also work assignments, previously denied them, because of risk. Status epilepticus, previously common, is now a rarity. Residual seizures are far less severe, and the present trend is so promising that we expect more favorable results in the future.

TABLE 9.—*Comparative Effects of Phenobarbital, Dilantin Sodium and the Two Drugs in Combination on Expected Seizure Incidence*

	Reduction from Expected Number of Seizures, %	Number of Patients
Phenobarbital by central control	68	141
Dilantin sodium substitution experiment		
Phenobarbital alone	52	18
Dilantin sodium alone	6	
Phenobarbital and dilantin sodium	81	
Supplementary dilantin sodium study		
Phenobarbital alone	47	23
Phenobarbital and dilantin	74	

SUMMARY

Patients with severe epilepsy confined in the Grafton State Hospital have been given intensive and extensive pharmacologic treatment. The increase of phenobarbital dosage up to an average of about 3 grains a day per patient, with due regard for the individual effect, has been attended by great reduction in seizure incidence, amounting to about 68 per cent when compared with treatment by phenobarbital alone given in a routine way and haphazardly.

Dilantin sodium alone has not exerted as favorable an effect in reducing seizure incidence as adequate phenobarbital dosage.

The use of amphetamine sulfate is recommended because of its value in dissipating the untoward effect of idiosyncrasy or excessive doses of phenobarbital. It also has a favorable, although somewhat less marked, effect on the toxic manifestations of dilantin sodium. Furthermore, it permits these drugs, especially phenobarbital, to be continued in unchanged dosage, even though this dosage by itself produces untoward results and when the reduction of dosage would result in increased attacks.

More striking and most important is the synergism existing between phenobarbital and dilantin sodium. The combination is far more efficient than either drug used alone, the reduction in seizure incidence being at least 50 per cent over the most favorable results

[4] Figures were determined by the ratio of the weekly seizure incidence under a given drug or drug combination with the number of seizures expected weekly on the basis of individual records in the two years prior to the start of our present program.

obtained without the synergistic use of these drugs. This synergism is in line with the theory that the epileptic attack is a symptom complex and that there are more pharmacologic roads than one to its control.

Up to the present the total trend is remarkably favorable for the further reduction of seizures. On the basis of our experience we feel that in cases of epilepsy which do not yield totally to phenobarbital these two drugs should be used together. In fact, there is no reason why they should not be used together in every new case of epilepsy.

CORONARY OCCLUSION

A REPORT OF UNUSUAL ACTIVITIES AFTER RECOVERY

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NEW YORK

There has been in recent years a better appreciation of the relation of structure and function of organs. In ascertaining the prognosis and the expectation of life for patients with heart disease, more emphasis is placed on the functional and less on the anatomic state of the heart and circulation. This change has been notable in the domain of valvular disease. The knowledge of the effects of coronary thrombosis is recent and is still being added to and revised. At first occlusion of a coronary artery was considered immediately and potentially dangerous to life. With more extensive observation there comes a realization that the prognosis must be suited to the degree of damage. The accepted mode of treatment requires restriction of physical activities and freedom from worry as far as possible, for the patient with angina pectoris or the patient who has suffered acute occlusion of a coronary artery is susceptible to other attacks, either fatal or incapacitating. In general it is considered that he should from choice, if not from necessity, forego unnecessary activities.

The exact demarcation between necessary and unnecessary activities is difficult to draw and even more difficult to maintain. To be occupied in a vocation entails exposure to the strains that go with the vocation and the necessary acceptance of activities that may be strenuous. The inescapable trend of such a course is evident in the life of the practicing physician. The vicissitudes of effort, of sleep, of hours of eating, of physical and mental strain are only too inherent in the conduct of a medical practice. To avoid them may mean failure to perform the full duties of, and perhaps therefore the necessity to resign from, the profession.

Probably more than other professional men, physicians suffer from cardiovascular disease, and especially coronary thrombosis. Those who have been afflicted must consider in the period of convalescence the question of retirement or of limited professional activity and its handicap. The issue is difficult to settle. Even as retirement is not desired or possible, so may it not be necessary. Return of physical capacity has often been beyond expectation. The personal records of others are salutary guide-posts. It is my purpose in this report to relate the unusual degree of recovery of a man who has had, so far, over five years of active endeavor after a severe acute attack of occlusion of a coronary artery.

This man has had an intimate experience with vicissitudes of coronary thrombosis. His brother died of an acute occlusion at the age of 56, one year before the patient suffered his attack. His father died suddenly at 62 of heart disease. His mother-in-law died of a second attack three weeks after her first because, as he expressed it, she had been allowed to be too active. He has had many business acquaintances who have had the same affliction. He has a good understanding, because of his analytic and scientific aptitudes, of the pathologic processes involved in this disease. In the early period of his convalescence he was advised to continue his business career after careful trial of his capacity to meet its demands. With due care, exercised over a period of one year, he resumed and for a second year confined his activities mostly to his vocation. In the last few years, however, the scope of his business affairs has widened considerably. He has elected and been able to meet the increased demands without trouble; also, because of his active temperament, he has indulged in avocations of an unusual nature, to be described.

His original attack occurred Oct. 10, 1933, when he was 43 years of age; it was accompanied by severe substernal pain. During the three weeks before the acute attack there had been seven or eight periods of substernal discomfort, lasting several minutes, usually at the end of a day's work. His wife had been ill for three years with aplastic anemia, which had worried him considerably. He was indulging in athletics and leading an active, intense business life. His attack occurred during the forenoon. Electrocardiographic examination during the afternoon revealed early changes of coronary thrombosis. He was at home for three days. October 13 he was admitted to the hospital. At that time the temperature was elevated by 2 degrees. It gradually fell to normal by the tenth day. The white blood count was 16,000 cells per cubic millimeter on admission. Within one week it had fallen to the vicinity of 10,000, where it remained thereafter. The electrocardiographic changes were present in the standard second and third leads and in the precordial lead (fig. 1). Frequent records, including the precordial tracings over the front and the back of the chest, were taken. In one electrocardiogram premature contractions of ventricular origin were noted. The infarcted area was in the posterior aspect of the left ventricle. X-ray examination of the heart showed some decrease

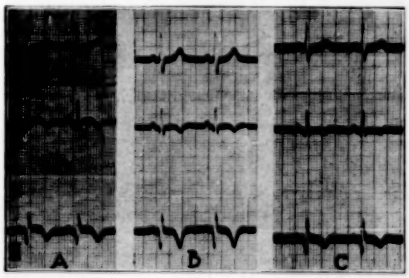

Fig. 1.—The electrocardiograms with standard leads: *A*, taken Oct. 13, 1933, three days after the attack of coronary occlusion; *B*, taken December 4, three days before discharge from the hospital; *C*, taken April 15, 1939. The lead is designated to the left. Precordial leads were also taken; the tracings over the apical portion of the heart showed at first large upright T waves, which became smaller.

in its size during convalescence. On admission the cardiac area was 136 sq. cm.; the transverse diameter was 15.2 cm., that of the lung fields 22.5 cm. (fig. 2). December 4, eight weeks later, the cardiac area was 125 sq. cm.; the diameter of the heart was 12.9 cm., that of the lung fields 26.5 cm. In the earlier film the right dome of the diaphragm was at the level of the eleventh rib posteriorly and in the later film at the tenth rib. Both films were taken with the patient supine in bed.

The regimen of convalescence was rigorously followed. It included seven weeks of complete rest in bed. The patient was discharged from the hospital December 7. He remained at home for one month, foregoing business but undertaking physical activity by gradually increasing walks. He then spent six weeks in Nassau, usually spending twelve hours of the twenty-four in bed and lying about on the beach in the morning; the mean pulse rate was 54 on waking in the morning and 60 at rest during the day. His subsequent activities may be described in his own words in a letter dated April 9, 1937:

Activities since January 1934 have been slowly but steadily increasing. The best measure of activity has been the amount of rest required in each twenty-four hours. The amount of rest in 1934 was about fifteen hours. This level has been reduced to a present average of about nine hours. Business activity has gone up, starting with zero activity in April 1934, steadily increasing until January 1937, when full normal business activity was resumed.

Smoking was dropped completely on hospitalization in 1933 and has never been started again; no coffee at any time; very weak tea irregularly; moderate alcohol irregularly.

Beginning in 1935 a great deal of flying has been done, both as passenger and as pilot, averaging perhaps 100 hours a year. The flying altitude was 3,000 to 5,000 feet, but a considerable amount of flying has been done at altitudes up to 15,000 feet.

The first skiing was in December 1935, with one week at Lake Placid at an elevation of 1,700 feet; in March 1936 there were two weeks at Arosa, Switzerland, at an elevation of 5,000 feet; in 1937 there were three days at St. Moritz at an elevation of 5,000 feet and one week at Zugspitze, Bavaria, at 8,000 feet. The altitude effect in skiing has been quite noticeable as quickened breathing. A further altitude effect was difficulty in getting any sound sleep, experienced at Arosa in 1936, but there was no difficulty whatever at the higher elevation in Zugspitze in 1937.

In addition to skiing, exercise has consisted in occasional swimming and regular dancing, averaging perhaps three to four hours weekly.

Beginning in 1935 green vegetables and fruit were substituted for a substantial part of the usual concentrated carbohydrate and protein foods; green vegetables were usually substituted for meat at one meal a day and fresh fruit for desserts at the main meals. There has been a very large consumption of oysters and clams, averaging perhaps half a dozen per day five days a week.[1]

It seems that a marked increase in the feeling of well-being was coincident with the change in diet in 1935. Following each of the skiing holidays in 1936 and 1937 there was also marked increase in the feeling of well-being, gain in weight and reduction in the amount of sleep required. Now from seven and a half to eight and a half hours per night are adequate.

There has been on the average one European trip of about seven weeks' duration every six months since 1934. The trips have been in the main under de luxe conditions but with occasional hardships of travel, such as sleepless nights and limited diet.

The hardest physical exertion has been in skiing, which has been sometimes certainly heavier than was intended and gone nearly to the point of temporary exhaustion.

1. This diet was selected by the patient.

The death of his wife in June 1934, after a prolonged illness, entailed considerable worry.

His business life requires important decisions in one of the largest corporations in the United States. On his journeys in Europe, negotiations on a large scale have been made with foreign concerns. His business activities became more intense in 1937 and 1938, especially during the critical period in Europe in August and September of 1938 and likewise in 1939. A report dated Jan. 16, 1939, details the extent of these activities:

The regimen established in the beginning of the year 1937 was continued without change through that year and 1938, except that I had no opportunity to do any high altitude skiing during the winter of 1937-1938, owing to pressure of business.

My flying time as pilot has also been almost nil over the last two years for the same reason, but my flying time as passenger has been if anything greater. I spent four months in Europe in two trips in the year 1937 and nearly five months in two trips in the year 1938. During these trips my average was perhaps three nights at a stretch in the same bed. Taking out twenty-one days at sea in each year, this would mean about twenty-five days or nights of travel a year in Europe, about half of which was by rail and the other half by air. In addition, each year there has been a fair amount of travel in the United States, including a transcontinental air trip each year. The trip in 1937 necessitated sitting up all night because the sleeper planes were not yet in use; the 1938 trip was in a sleeper plane. American transcontinental altitudes are in the range of from 6,000 to 12,000 feet. European altitudes are lower on the average, being from 3,000 to 8,000 feet, except in the Alps, where I have done very little traveling.

My principal reliance for exercise continues to be skiing and dancing, with supplementary gymnasium work, usually at sea. My weight has increased about 5 pounds during the last two years to the present level of 156 pounds. I usually gain 2 to 4 pounds during a European trip and lose most of it afterward.

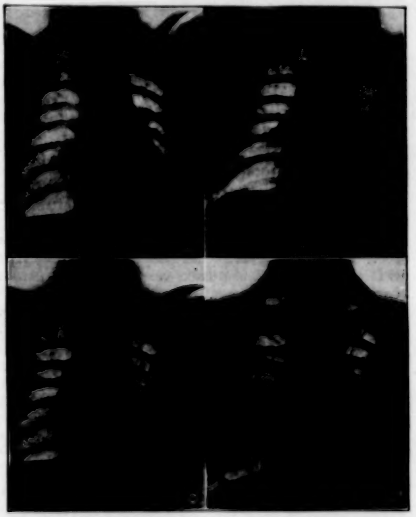

Fig. 2.—Size and shape of the heart, anteroposterior view, from a distance of 6 feet. The patient was lying supine for *A*, *B* and *C* and standing upright for *C'*. The dates are given in the legend for figure 1; *C'* was taken on the same day as *C*.

His remarks following another European trip in March 1939 were:

My skiing holiday was reduced to four days at Kitzbuehl. The elevation of the town hotel was only 800 meters, but the principal skiing slopes are at an elevation of 1,800 meters. I had the usual amount of travel, including flying, but this is all now so much of a routine that I seldom think of it.

Examinations of the patient have been made at semiannual and annual intervals since his acute illness nearly six years ago. The most recent ones were in November 1938 and April 1939, subsequent to European journeys. The electrocardiogram has presented the residual changes of myocardial infarction (fig. 1). The cardiac shadow has appeared normal in size and shape (fig. 2).

COMMENT

The history of this patient presents unusual features. There was no lack of cooperation during treatment of the acute state. There has been good understanding, on his part, of the nature of coronary thrombosis and its after-care. Flying in airplanes and even piloting a plane alone he has accomplished without trouble. He noted on one occasion while flying a plane across the White Mountains of New England at an altitude of 15,000 feet a slight quickening of respiration and a rise in the pulse rate from 72 to 84. Skiing at a high altitude involves presumably a double burden on the heart, yet he felt improved in strength at the time of his first residence in a high altitude. The history of the effects of coronary thrombosis is such, however, that natural improvement may have occurred at this time. He has been an active man for five and a half years since the original attack, certainly a long period of trial.

There are, no doubt, numerous personal records of unusual degrees of recovery from coronary thrombosis. Of published reports, letters of two English physicians are of interest. One, a consulting practitioner, not only resumed his professional life, with some changes, but indulged in seaside bathing, salmon fishing and skiing and skating in Switzerland.[2] The other, a surgeon, resumed surgical practice, operating up to three hours at a stretch; fond of sports, he indulged at first in cub hunting and later in riding to hounds.[3] In both instances, as in the present case, the period of complete bed rest of from four to six weeks after the acute attack and the gradual resumption of activity in the succeeding five to six months were followed. These are the most important features of treatment.

SUMMARY

The history of a patient who suffered an attack of acute coronary thrombosis is considered noteworthy not because of the disease but because of the activities which the patient has been able to maintain, following very careful treatment for the acute condition. His business career was resumed on the basis of his capacity to meet its demands. The scope of the demands enlarged considerably and entailed a degree of activity beyond that advised and considered possible. In addition, because of his active temperament, flying at various altitudes up to 15,000 feet, dancing, swimming, and skiing each winter at altitudes up to 10,000 feet have all been accomplished apparently without detriment.

This report is published not to stimulate others who have suffered from coronary thrombosis to indulge in unusual endeavor but to encourage them in expectation of being able to pursue normal activities without too severe restrictions. The range of activities can be gaged only according to the capacity of the individual.

NOTE.—Since this paper was submitted for publication, the patient has made a further unusual journey. He traveled by airplane (Pan-American Airways) to Europe on Aug. 16 and 17, 1939; the trip included nineteen hours of continuous flying from Port Washington, Long Island, to the Azores, and eleven hours of additional flying to Lisbon and Marseilles. The usual height flown on the southern Atlantic route is from 8,000 to 10,000 feet. He returned by airplane over the northern route on October 9 and 10, the journey from Foynes, Ireland, to New York taking about twenty-four hours. Although the flying height was usually 1,000 feet, part of this trip was very uncomfortable because of nausea due to rough weather.

An examination Oct. 20, 1939, six years after the original attack, requires no additional comment on the clinical, electrocardiographic and x-ray appearances.

135 East Sixty-Fourth Street.

2. Coronary Thrombosis and After: A Personal Story, correspondence, Lancet 2:331 (Aug. 11) 1934.
3. Coronary Thrombosis: The First Year After, correspondence, Lancet 2:1472 (June 22) 1935.

Clinical Notes, Suggestions and New Instruments

DELAYED CUTANEOUS REACTION TO INTRADERMAL INJECTION OF BRUCELLERGEN IN BRUCELLOSIS

L. E. JANUARY, M.D., AND JAMES A. GREENE, M.D., IOWA CITY

The cutaneous reaction following the intradermal injection of brucellergen is one of the diagnostic aids in brucellosis. The reaction, when positive, begins within twenty-four to thirty-six hours after injection and persists for more than forty-eight hours. The test is positive if, in addition to an area of erythema around the site of injection, there is also edema or induration which measures from 0.5 to 0.75 cm. or more in diameter. A delayed reaction, that is, one which does not begin until forty-eight hours or more after injection, is rare. It is for this reason that we are reporting a case in which the cutaneous reaction did not appear until the fourth day after the injection of brucellergen.

REPORT OF CASE

A farmer aged 43 entered the University Hospital July 10, 1938, because of headache, pain in the legs and fever. He had always enjoyed good health until December 1937, when he noted bloating of the abdomen after meals. The condition did not progress until three weeks later, when he was seized with severe pain in the lower back which radiated down the distribution of both sciatic nerves and forced him to bed. About the same time chills, fever and exhaustion appeared. These symptoms persisted with exacerbations and remissions until his admission to the hospital.

He consulted his physician about one week before admission, at which time a tentative diagnosis of brucellosis was made. Sulfanilamide was prescribed, and a severe persistent daily headache developed the following day. This symptom caused him to discontinue the drug and to come to the University Hospital. The history did not reveal the source of the Brucella infection.

The significant objective manifestations in this well developed and nourished man, who appeared acutely ill, were tenderness over both sciatic foramina, a temperature of 100.2 F., a pulse rate of 100 beats per minute, a leukocyte count of 13,200, a normal spinal fluid, a negative blood Wassermann reaction, repeatedly negative blood cultures and agglutination reactions for Brucella, a positive opsonocytophagic index, and a trace of sulfanilamide in the blood.

One tenth cc. of brucellergen was injected intradermally into the left forearm on July 10. There was no reaction at the site of injection until the late afternoon of July 14. The

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following morning the area of erythema measured 4 cm. in diameter, and the central area of edema 1 by 1.5 cm. A second cutaneous test, made on the right forearm on the evening of July 14, resulted the next morning in an area of erythema 6 by 6 cm. in diameter with a central area of edema measuring 2 by 2.5 cm.

COMMENT

Huddleston [1] states that a delayed skin reaction in brucellosis is extremely rare. He has observed only two such instances. In both cases the specificity of the reaction was doubtful. Foshay,[2] on the other hand, thinks that the delayed reaction is not as rare as the literature indicates. He has seen such reactions in four or five cases of undoubted brucellosis. In his experience the reaction may be delayed as late as the seventh day, and such a delayed reaction is more likely to occur in the chronic than in the acute phase of the disease. That this type of reaction is rare in this clinic is illustrated by the fact that the diagnosis of brucellosis has been made in 160 cases during the past nine years, during which time only two such reactions have been observed. The other occurred in a parent of a patient in the Department of Pediatrics and was called to our attention by Dr. R. L. Jackson.[3] We have been unable to find any report in the literature of a delayed skin reaction, as such, but Dr. Foshay states that he has seen it mentioned in the general literature on brucellosis.

The cause for the delayed reaction is not clear. The administration of sulfanilamide to our patient just prior to the test raised the question whether or not this drug prolonged the time of appearance of the reaction. That not all delayed reactions are due to this drug is shown by the experience of Huddleston, Foshay and Jackson, whose patients did not receive sulfanilamide. Furthermore, our own experience makes it doubtful whether sulfanilamide will produce a delay in the cutaneous reaction in brucellosis. We have administered the drug for periods of from two to five days to two patients who previously had shown positive cutaneous tests without alteration of the time of appearance of the reaction. A third patient receiving the drug at the time of admission did not show a delayed reaction. The last patient had not had a previous cutaneous test with brucellergen.

1. Huddleston, I. Forrest: Personal communication to the authors.
2. Foshay, Lee: Personal communication to the authors.
3. Jackson, R. L.: Personal communication to the authors.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. PAUL NICHOLAS LEECH, Secretary.

THE PRESENT STATUS OF THERAPY WITH CHORIONIC GONADOTROPIN

The gonadotropic substance from the urine of pregnancy has been available for clinical use for nine years. Although it was enthusiastically received by physicians and placed in extensive therapeutic use, there has always remained a certain amount of skepticism as to its value. The following report contains a summary of the experiences with this substance in the clinic up to the present time with an evaluation of the results reported.

When the gonadotropic activity of pregnancy urine was first demonstrated by Zondek, it was considered that the responsible substance was secreted by the anterior pituitary. In rodents, pregnancy urine, or certain extracts thereof, induced follicular growth and corpus luteum formation. At the time, the concept was advanced that this gonadotropin consisted of two hormones —prolan A, the follicle stimulating hormone, and prolan B, the luteinizing hormone—on the basis of its effect in the rat, mouse and rabbit. Further experimentation has, however, revealed that this substance is a single entity and not composed of two factors, that it arises from the placenta rather than from the pituitary and that it differs fundamentally from the gonadotropins of the anterior lobe.

One of the most significant differences in its physiologic reactions from anterior lobe preparations is its inability to stimulate to any appreciable extent the ovary of the monkey or the human being. Injection of chorionic gonadotropin into primates will not induce follicular growth or corpus luteum formation. On the contrary, reliable investigators have observed definite degenerative changes in the ovaries of women and monkeys treated with this substance. In addition, no clearcut endometrial responses have been observed in primates treated in this manner, which indicates conclusively the inability of this substance to stimulate the growth of normal ovarian structures.

The physiologic action of chorionic gonadotropin is not limited to the female, but it exerts a definite effect on the male reproductive organs. It is generally agreed that this substance acts on the interstitial cells of the testes, causing them to elaborate the androgenic hormone of the testis, which in turn induces growth of the accessory sex organs. This substance is effective in male monkeys and human beings. Among the reactions induced in the monkey is the descent of the testes in the prepubertal animal. In some animals there may be some increase in size of the semeniferous tubules, but there is little if any effect on the germinal epithelium. Spermatogenesis is, however, maintained by chorionic gonadotropin in recently hypophysectomized rats, but it is not restored after atrophy or induced in normal immature rats.

The therapeutic application of chorionic gonadotropin has covered a wide range of conditions. Many of the trials have been on an unsound or improperly conceived basis. Its use in the treatment of ovarian disturbance, for example, has no scientific rationale at the present time, although when first introduced for the treatment of these dysfunctions the physiologic basis for therapy appeared excellent.

First, Novak and Hurd [1] reported gratifying results in the treatment of functional menorrhagia with chorionic gonadotropin. They based their treatment on the concept that excessive menstrual flow of functional origin resulted from the lack of an active corpus luteum in the ovary. Thus the ovarian estrogen was unopposed by progesterone, the hormone of the corpus luteum, with consequent uterine hemorrhage. Chorionic gonadotropin was therefore administered in an attempt to induce the formation of a corpus luteum in the patient. The reported successful results were ascribed to this response. It developed shortly afterward that this substance has little or no ability to luteinize the human ovary. Novak [2] has since admitted the lack of a suitable explanation for the therapeutic responses which he obtained in such cases, although he still maintains that good results are obtained. It might be mentioned at this point that functional uterine bleeding is frequently found in the presence of a secretory endometrium, which indicates an active corpus luteum in these cases. The rationale of unopposed estrogen originally advanced for the use of chorionic gonadotropin in menorrhagia is therefore without basis in many instances.

By far the most common type of ovarian dysfunction treated with this substance is uterine bleeding. As mentioned previously, a satisfactory rationale for the treatment in this condition is lacking. There have been published, however, a great many reports dealing with such therapy. Some of these reports favor enthusiastically the use of chorionic gonadotropin in bleeding cases while others are equally pessimistic. It is difficult to discount the results of many investigators, but at the same time the failure to obtain such results by others cannot be disregarded. A recent review by Jeffcoate [3] analyzes thoroughly the literature up to 1937. Jeffcoate combined a summary of the published data with the results of a questionnaire which he submitted to a number of clinicians in Europe. The following quotations indicate much of Jeffcoate's evaluation of this therapy:

"Results Collected from Literature."—The collection of published results is associated with many difficulties. The number of communications dealing with organotherapy is immense, but the number of recorded cases is comparatively small. Many authors mention that they have treated several hundreds of patients successfully, but they make no attempt to give details, and others base their conclusions on isolated cases. Extravagant claims, unaccompanied by clinical notes, are common and create the impression that they are handed on as unverified statements from one

1. Novak, Emil, and Hurd, G. B.: Use of an Anterior Pituitary Luteinizing Substance in the Treatment of Functional Uterine Bleeding, M. J. Obst. & Gynec. 22:501 (Oct.) 1931.
2. Novak, Emil: Cause and Treatment of Functional Uterine Bleeding, Texas State M. J. 34:263 (Aug.) 1938.
3. Jeffcoate, T. N. H.: Treatment of Functional Uterine Hemorrhage by Means of Gonadotropic and Ovarian Hormones, J. Obst. & Gynec. Brit. Emp. 44:31 (Feb.) 1937.

writer to another. After a close search and excluding articles in which not more than two cases are described, records (and some of these are very incomplete) of only 594 cases have been traced. Comparison of individual statistics is not always easy, since different commercial preparations are used by different observers; some series of cases are grouped on a pathological, others on a clinical, basis, while many are presented without any attempt at classification. Moreover, the after-histories of the cases described are frequently omitted."

"*Control of Bleeding.*—Consideration of table I reveals extraordinary variations in results. The percentage of cures varies from 100 to 28 and is 69 for the whole series. Some writers are much impressed with this method of treatment while others consider it almost useless. There is a suggestion in recent reports that others have noticed this lack of uniformity in results.

"In this connection, inquiry into the details of recorded cases shows that individual criteria of success vary, and many patients described by a particular writer as being cured would be viewed by another observer as showing no response to treatment. Moreover, the estimation of results is always clouded by the fact that functional uterine hemorrhage is a condition which is likely to cease spontaneously, and it is impossible to control results except by amassing large numbers of cases.

"Other factors contributing to the variation in results are the differences in the individual technics and dosage and the inconstant potency of the preparations used, as emphasized by Novak and Hurd. Nevertheless it is likely that the total figures of reported results, as presented here, give a more accurate conception of the value of the treatment than do the claims of individual writers each basing his conclusions on small numbers of cases."

"The opinions expressed in reply to the questionnaire (tables IX and X) are illuminating and provide the final and conclusive proof that this form of treatment does not satisfy the claims which hitherto have been made for it. Of twenty-seven authorities using gonadotropic hormones, only five report consistently good results (in specially chosen patients), fourteen note poor or fair response, and two of these, Maguire, Plass, prefer to use thyroid extract. Eight emphasize the variation in results, and one, Standen, believes that all the so-called cures are merely spontaneous and in no way connected with the treatment. From these figures the only possible conclusion is that clinicians in general are coming to regard even this type of organotherapy as being unreliable, and although it may produce some brillant results, it is by no means rare to see patients who show no response to it."

The response of such cases to chorionic gonadotropin is often temporary. According to Jeffcoate:

"Although it is frequently stated that the advantage which the use of gonadotropic hormones has over other methods of treatment such as curettage or even the administration of corpus luteum is that the disordered ovarian cycle is permanently corrected, the statistics presented in the accompanying tables provide no confirmation of this. On the contrary, the high proportion of cases which relapse is a clear indication that the success of treatment is purely temporary. Novak, who in 1931 professed himself unable to say whether the results were permanent, now asserts that the effect applies only to the particular attack of hemorrhage for which organotherapy is instituted. Neumann and Meigs also conform to this opinion. The replies to the questionnaire provide further confirmation of this view; there are no observers who say that gonadotropic hormonal therapy is consistently permanent in its effects, two say it is probably permanent, and a third that it produces permanent cures in pubescent cases only; the remaining twenty-one replies (88 per cent) indicate that it is purely temporary in action or very variable in its remote effects. It would seem that the subsequent menstrual history of most patients resembles that of those who receive no hormonal treatment for this disorder. All these cases of functional uterine hemorrhage are temporary with a tendency to a spontaneous recovery, but there is, in all, a distinct possibility of a recurrence of hemorrhage or periods of amenorrhea. It may be that the more frequent and more rapid occurrence of relapses in menopausal patients explains why this form of treatment is apparently of less value in their cases than it is in the control of anovular hemorrhage in early life."

Few clinical reports have appeared since 1937. Novak in 1938 wrote that "in a considerable proportion of cases the bleeding is checked or improved though in many others it is not." Mazer,[4] who at one time wrote optimistically that chorionic gonadotropin was "almost a specific in the treatment of functional uterine bleeding of puberty and maturity," has altered his views somewhat. He believes now that there is a "cure" in 60 per cent of dysfunctional bleeding in the child bearing age, but it is far less effective in pubertal or menopausal bleeding."

Hamblen[5] has recently reviewed the therapeutics of gonadotropic substances in ovarian disorders. His conclusions reflect the uncertainty of this therapy:

"Consideration of the clinical data available indicates that there exists little definite proof that therapeutic efficiency has been established for the gonadotropes in most supposed endocrinopathic gynecology."

There seems little doubt that the early enthusiasm is shared by fewer investigators at the present time. The skepticism of many as to its value in bleeding cases is nurtured by the lack of a sound physiologic basis for such therapy. In the first place, the causes of these conditions have not been demonstrated and, in the second, the ability of chorionic gonadotropin to induce appropriate ovarian changes seems most doubtful.

4. Mazer, Charles: Personal communication.
5. Hamblen, E. C.: Clinical Evaluation of Ovarian Responses to Gonadotropic Therapy, Endocrinology **24**: 848 (June) 1939.

The possibility of ovarian damage by this therapy has been discussed by various investigators. It is commonly noted that patients develop periods of six to nine months amenorrhea after the therapy, which is interpreted frequently as a temporary arrest of ovarian function. Likewise, the occurrence of an increase in menstrual flow immediately after the first or second injection has been suggested as being due to a sudden drop in estrin threshold due to inhibition of ovarian activity. The consensus is, however, that little permanent damage is inflicted by chorionic gonadotropin.

There are numerous other ovarian conditions in which chorionic gonadotropin has been tried, such as amenorrhea, dysmenorrhea and sterility. Most of this work is fragmentary or inadequately confirmed. The lack of data justifies the conclusion that the claims for the use of chorionic gonadotropin in these ovarian disturbances are unwarranted.

CRYPTORCHIDISM

By far the greatest use for chorionic gonadotropin therapy has been in the treatment of disturbances of the male sex organs. A large number of investigators have reported successful treatment with it in cryptorchidism and in hypogonadal states. Data have been presented which ordinarily would firmly establish this treatment in cryptorchidism as reliable and consistently beneficial. In the past year or two, however, a certain amount of doubt has developed as to the value of this therapy and the entire problem has been reopened to considerable questioning.

Engle showed that chorionic gonadotropin was capable of inducing descent of the testes in immature monkeys. Shapiro[6] was first to demonstrate that similar results could be obtained in cryptorchid boys. This work was soon confirmed by many others, and it became more or less accepted that this therapy was indicated in all cases of cryptorchidism unless there was some form of anatomic lesion preventing the descent of the testes into the scrotum.

In spite of the general accord with which this therapy was held, a discrepant note was later interjected by several investigators. Thompson[7] and others have repeatedly failed to obtain the high percentage of successful results reported by other workers. They were able to induce descent in only 20 per cent of fifty undescended testes compared to about 60 per cent of 860 undescended testes reported in the literature. They attribute this difference in results to the fact that there was excluded from their treatment all testes of the migratory type—those which can be readily manipulated into the scrotum. This type of testis was classified as pseudocryptorchidism, which has been described by Hamilton. Gentle handling, warmth and relaxation will often relieve the cremasteric spasm and bring the testes into the scrotum. It seems quite likely that many such cases have been included in series which were treated with chorionic gonadotropin. Those cases in which descent was induced within a few hours or days are undoubtedly pseudocryptorchids.

The conviction is growing that testes which descend after hormonal therapy are those which would descend without treatment at puberty. Apparently the mechanism of descent is the elaboration of testicular hormone spontaneously at puberty or induced by gonadotropic hormone administration before puberty. Johnson[8] has recently called attention to the fact that of 1,000 boys examined in a routine manner seventeen were cryptorchid but that there were only two adults in 1,000 with this condition. He believed it conclusive, on these grounds, that fifteen of the original seventeen in 1,000 had had spontaneous descent.

Thompson and his associates likewise have questioned the value of chorionic gonadotropin therapy for descent of the testes if it does no more than produce a descent at an earlier age than at which there would be a natural cure. According to these authors:

"The crux of the problem is whether a testis made to descend at an early age with treatment is more likely to be normal than one which descends later without treatment. The consensus appears to be that in

6. Shapiro, Bernhard: Kann man mit Hypophysenvorderlappen den unterentwickelten männlichen Genitalapparat beim Menschen zum Wachstum anregen? Deutsche Med. Wchnschr. **56**: 1605 (Sept. 19) 1930.
7. Thompson, W. O.; Heckel, N. J.; Thompson, Phebe K., and Dickie, L. F. N.: Further Observations on the Treatment of Hypogenital and Undescended Testes with Special Reference to the Production of Premature Puberty, Endocrinology **22**: 59 (Jan.) 1938. Thompson, W. O., and Heckel, N. J.: Undescended Testes, J. A. M. A. **113**: 397 (Feb. 4) 1939.
8. Johnson, W. W.: Cryptorchidism, J. A. M. A. **113**: 25 (July 1) 1939.

true cryptorchidism the testis should be brought into the scrotum at an early age, although there is some difference of opinion on this point. Treatment with this material, by distinguishing between those cases in which descent is prevented by anatomic factors and those in which it is not, makes it possible to tell early what patients will require surgical intervention. However, it should be pointed out that little is known about the effect of premature stimulation with this material on the function of the testis after puberty."

In their opinion, the puberty hormonal treatment of this condition should not be accepted without question:

"In the light of these observations it is important to maintain an open mind on the treatment of undescended testes with the anterior pituitary-like principle. Many reports appear to be overenthusiastic. If the importance of bringing the testis into the scrotum at the earliest possible age has not been overestimated, perhaps the wisest course is to administer this material cautiously and carry out operative procedures if descent fails to occur."

An analysis of the results and more recent trends in such therapy reveals that (1) cures are not as frequent as reported in the early literature, which undoubtedly included many cases of pseudocryptorchidism, (2) most cases which respond to such therapy would descend spontaneously at puberty, (3) those cases which do not respond to this therapy require surgery, and surgery at an early age is desirable, and (4) such therapy reveals usually whether or not the testes will descend spontaneously without waiting until puberty arrives. It also claimed that endocrine therapy aids in the surgical treatment of undescended testes, either preoperatively or postoperatively. It may therefore be concluded that, although the early optimism is unwarranted, gonadotropic therapy is of value in cryptorchidism if the limitations of such therapy are understood by the physician.

The untoward or toxic effects have been chiefly confined to an occasional inflammatory reaction and pain at the site of injection or an occasional mild febrile reaction. Precocious puberty with enlargement of the genitals is a more serious type of undesirable reaction in boys under treatment. This occurs usually after long continued administration at a relatively high dosage. Besides the dangers of psychic disturbances, there exists the possibility of affecting the growth of long bones by this premature aging under the influence of the male sex hormone elaborated by the testes. In order to avoid the risk of excessive testicular stimulation, it is advisable to limit the administration of chorionic gonadotropin to from six to eight weeks. If there are no signs of descent by this time, there is slight chance of its occurring.

In addition to this danger, it has been shown that long continued administration may lead to inflammatory changes and adhesion about the retained testes which may interfere with surgical procedures.[9] These observations have not been confirmed as yet.

HYPOGONADISM

The condition which is most often associated with hypogonadal activity is the so-called Frölich's syndrome. The diagnosis of disturbance is quite frequently made, usually on the basis of fat distribution and small genitalia. Most of these patients, however, respond to diet alone and after puberty develop in a normal manner sexually. The diagnosis of hypogonadism or Frölich's syndrome in boys should be made with reserve and the endocrine treatment should accordingly be avoided. After the normal age of puberty, however, hypogonadism can be more readily diagnosed and treatment may then be instituted.

The few reports in the literature indicate that adult patients who failed to mature sexually may respond to chorionic gonadotropin. The genitals enlarge and masculine characteristics develop. This therapy is temporary, however, and the changes regress as soon as the therapy is stopped. The data published on the results with this therapy are as yet inadequate as a basis on which final conclusions can be drawn.

SPERMATOGENESIS

Several investigators have reported the use of chorionic gonadotropin in sterility. Their studies are rather incomplete. Brosius and Schaffer[10] have reported the induction of spermatogenesis with such therapy in a case of azoospermia. Heckel[11] has treated eight sterile males with this substance, after which the wives of two became pregnant. Rubinstein[12] claims that the sperm counts increased following such therapy. His results are statistically unconvincing. On the other hand, McCahey[13] was unable to demonstrate any increase in the sperm count after injection of chorionic gonadotropin. Many other urologists have been disappointed in its use in sterility. The physiologic response of this substance in experimental animals would not lead one to anticipate much of an effect on spermatogenesis, since it is well known that this substance influences chiefly the interstitial cells and has little if any effect on the germinative epithelium. It is therefore apparent that deficient sperm formation is a doubtful indication for such therapy on both clinical and experimental evidence.

OTHER REPORTED USES

Many conditions have been suggested for the use of chorionic gonadotropin. Acne, the eternal target of every new endocrine preparation, has received considerable attention. Except for isolated enthusiastic reports, the results have not been found encouraging.[14] Other conditions which have been mentioned for this therapy include enuresis, migraine and peripheral vascular disease, but adequate evidence in support of such therapeutic claims is still lacking.

CONCLUSIONS

Among the conditions for which chorionic gonadotropin is recommended are functional uterine bleeding, cryptorchidism, hypogenitalism, amenorrhea, oligomenorrhea and enuresis. In accordance with the more recent developments in this therapy the Council is unable to endorse many of these recommendations. The Council believes that such therapy is of definite value in functional cryptorchidism within the limitations discussed previously in this report. Although a considerable amount of data has been published on the treatment of uterine bleeding, the Council considers this therapy still unproved. Such treatment of other ovarian disturbances appears practically of little value. Until further evidence will have been made available, the Council approves of this treatment for cryptorchidism but considers such therapy of functional uterine bleeding as still being in the experimental stage. Likewise the treatment of male hypogonadism is also considered experimental. The Council approves of no other indications for such therapy at the present time.

THE FOLLOWING REPORT ON NOMENCLATURE WAS ADOPTED BY THE COUNCIL BUT WAS WITHHELD FROM PUBLICATION BECAUSE THE COUNCIL WAS CONSIDERING ACCEPTANCE OF THE DRUG, WHEN IT COULD BE PUBLISHED SIMULTANEOUSLY WITH THE DESCRIPTION OF THE LATTER. SINCE IT DOES NOT SEEM PROBABLE THAT THE DRUG WILL BE ACCEPTED IN THE NEAR FUTURE, IT WAS THOUGHT ADVISABLE TO RELEASE THE REPORT.

PAUL NICHOLAS LEECH, Secretary.

NEOPRONTOSIL (FORMERLY PRONTOSIL)—AZOSULFAMIDE

The term "Prontosil" has been used both abroad and in this country to denote a number of substances. The Council informed the Winthrop Chemical Company that it could not recognize the term "Prontosil." The firm stated that it would be willing to adopt the term "Neoprontosil" for the substance formerly known as 4-sulfonamide benzene-2-azo-1-hydroxy-7-acetylamino naphthalene-3: 6-*di*sodium sulfonate. The firm inquired whether the Council would be willing to accept the name "Azosulfanil" as the nonproprietary descriptive name for this product, but it was the opinion of the Council that this term might be misleading, since it carried apparently incorrect implication as to the structure of the compound. The Council voted that Neoprontosil be recognized as the Winthrop proprietary name for the product 4-sulfonamide benzene-2-azo-1-hydroxy-7-acetylamino naphthalene-3: 6-*di*sodium sulfonate, and that Azosulfamide be recognized as the descriptive nonproprietary name for this substance.

The Council points out, however, that the product "Neoprontosil" does not stand accepted for inclusion in New and Nonofficial Remedies because the firm, to date, has not made the product acceptable.

9. Mimpriss, T. W.: The Treatment of Retention of the Testis, Lancet **1**: 533 (March 5) 1938.
10. Brosius, W. L., and Schaffer, R. L.: Spermatogenesis Following Therapy with Gonad Stimulating Extract from the Urine of Pregnancy, J. A. M. A. **101**: 1227 (Oct. 14) 1933.
11. Heckel, N. J.: Gonadotropic and Gonadotropin-like Factors (Antuitrin and Antuitrin-S) in Male Sterility, Endocrinology **22**: 111 (Jan.) 1938.
12. Rubinstein, H. S.: Effect of Anterior Pituitary-like Hormone on Spermatogenesis, Endocrinology **23**: 75 (July) 1938.
13. McCahey, J. F.: Gonadotropic Hormone Therapy in Cryptorchidism and Disturbances of Spermatogenesis, Pennsylvania M. J. **41**: 358 (Feb.) 1938.
14. Ereaux, L. D.: Facts, Fads and Fancies in the Treatment of Acne, Canad. M. A. J. **39**: 257 (Sept.) 1938.

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SATURDAY, FEBRUARY 10, 1940

THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick as proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

THE NEW WAGNER HOSPITAL BILL

Elsewhere in this issue appear a statement sent by the President to Congress relative to his plans for the building of hospitals and also a transcript of a bill, S. 3230, introduced by Mr. Wagner in the Senate of the United States on February 1. Here is a new pattern not observable in other medical or hospital legislation introduced in recent years. This measure provides for assisting state, county, health and hospital districts or other political subdivisions; thus it recognizes the local character of most problems in medical service. The total sum involved is relatively small, indicating the experimental nature of the proposal. The third section indicates that communities applying for such hospitals must establish the existence of need. Moreover, these hospitals are to be available to all groups of the population.

Especially significant is section 4, which establishes a national advisory council to consist of six members, who shall be selected from leading medical or scientific authorities outstanding in matters pertaining to hospitals and other public health services. These six members are to be appointed by the Surgeon General with the approval of the Federal Security Administrator. These offices are largely honorary, since the compensation is $25 a day and expenses. Their services are wholly advisory, but obviously their opinions are likely to have considerable weight with the officials primarily responsible for carrying out the work. Indeed, the advisory council is charged with considering and recommending to the Surgeon General all applications for funds for building hospitals. It is to formulate standards, review reports and make inspections relative to professional services and the standard of maintenance of the hospital. In this connection the Surgeon General is also authorized, after consultation with the council, to study needs for hospitalization and problems of hospital operation, to approve projects in the hospital field, to provide for training and instruction of personnel, to make inspection and reports on professional services, and to safeguard the quality of service.

The hospitals are to be leased to the communities in which they are established, the only consideration for the lease being the maintenance and operation of the hospital in accordance with the provisions of the act. It is indicated that the lease may be terminated by the Surgeon General on six months' notice if the hospital fails to comply with the provisions of the act. Apparently nothing is said as to what will be done with a hospital in case the lease is terminated.

In section 10, hospitals are authorized to include physical facilities necessary not only for the prevention and diagnosis or treatment of disease but also for protection of the public health. Thus it becomes possible to establish health protecting agencies within the structure of the hospital. The divergence of opinions on the desirability of this integration of public preventive medical services into private or community hospitals demands careful consideration before the final wording is determined.

Coincidentally, Senator Mead, of New York, introduced into the Senate his bill, S. 3246, to authorize loans for hospitals, water, sewers, stream pollution control, and related projects and facilities. This bill proposes to authorize a federal appropriation of $300,000,000 for the projects mentioned. It defines a hospital as any institution or facilities for treating illness or disease, including any health, diagnostic or treatment center, station, institution or clinic. This bill also states that not to exceed $100,000,000 be devoted to the hospital projects. This bill has been referred to the Senate Committee on Banking and Currency, of which Senator Wagner is chairman.

The Wagner bill was also introduced into the House of Representatives on January 31 by Mr. Lea and referred in that body to the Committee on Interstate and Foreign Commerce. It would seem to any casual

observer that only one of these bills is needed to accomplish the President's purpose, and that therefore the Wagner bill is the one likely to have much consideration, rather than the Mead bill.

Obviously this bill, if enacted, will place a tremendous responsibility on the Surgeon General of the United States Public Health Service and the Federal Security Administrator. The location and conduct of these new medical institutions is a matter which will concern greatly not only the public but particularly the medical profession and all who work in the field of the hospital. Perhaps, therefore, it might be better to assign a little larger share of responsibility and control to the Advisory Council. Moreover, the language of the act is somewhat confusing in that certain phrases fail to specify clearly the fact that these clauses apply only to the hospitals to be built under the act and do not concern inspection, training of personnel, or control of hospitals and medical services generally.

THE COUNCIL ON PHARMACY AND CHEMISTRY COMPLETES THIRTY-FIVE YEARS OF SERVICE

Thirty-five years has passed since the Council on Pharmacy and Chemistry met at Pittsburgh to organize. Since that time its work as a standing committee of the Board of Trustees of the American Medical Association has been continuous. In 1905 the exploitation and advertising of drugs to physicians were "misleading," "mendacious," "execrable." Shortly after formation of the Council the Food and Drug Act of 1906 was passed by Congress. Probably at that time some felt that the passing of that law made the work of the Council unnecessary.

First the Council exposed the most egregious of the deceptions practiced on the medical profession. Then came the more serious task of passing on proprietary drugs detailed to the medical profession. Products which complied with the rules were listed in the column of THE JOURNAL called New and Nonofficial Remedies. The first issues of New and Nonofficial Remedies were printed as supplements to THE JOURNAL but soon it became evident that the material would be too voluminous for such use. In 1907 appeared a volume entitled Reprints of New and Nonofficial Remedies, including reprints from THE JOURNAL of articles tentatively accepted by the Council on Pharmacy and Chemistry. It contained 112 pages and included 230 products. The first issue of New and Nonofficial Remedies as a book, which has been the prototype of all subsequent annual volumes of this book, was that of 1909, consisting of 147 pages of descriptions of products. The latest volume of New and Nonofficial Remedies (1939) contained 531 pages, exclusive of the various indexes, and is printed in much smaller type than that of 1909.

From the time of its organization the names of the members of the Council and their connections have been made known; members, with the exception of the executive secretary, serve without remuneration. The Council publishes its conclusions, whether they were for or against the acceptance of a drug. It issues reports to the medical profession on matters of materia medica. Products are admitted according to a set of rules published for the information of physicians and manufacturers. Remuneration in any form is never accepted for the consideration of submitted preparations. Of the original membership[1] in the Council two have served continuously during this period—Professor Emeritus Robert A. Hatcher, of Cornell University Medical College, and Dean Torald Sollmann, of Western Reserve University School of Medicine. The Council still publishes its reports almost weekly in the columns of THE JOURNAL, both on the rejection and on the acceptance of various drug preparations. In addition it publishes statements on the status of new drugs. In 1939 reports on the status of drugs included those on sulfapyridine, chorionic gonadotropin, vitamin K, testosterone propionate, the promiscuous use of barbital compounds, sobisminol mass and sobisminol solution, cyclopropane, vitamins, local anesthetics, dilantin sodium, picrotoxin and stilbestrol.

The rules now governing the acceptance or rejection of remedies are practically the same as those adopted in 1905. The interpretation of the rules, however, has been amplified and clarified to meet new conditions. An additional rule was adopted about fifteen years ago to the effect that concerns whose policies were contrary to scientific medicine and inimical to the best interests of the public and the medical profession would not be recognized by the Council. Now, in 1940, the situation as far as the consideration of drugs is concerned is vastly improved, owing largely to the efforts of the Council, with the militant aid of THE JOURNAL. Advertising claims employed by manufacturers of pharmaceuticals for products accepted by the Council have, in the main, attained standards of accurateness and truthfulness not found in any other field of marketing or in the entire medical world outside the United States. In fact, physicians look askance at journals which accept advertising of non-Council accepted products. More and more physicians ask detail men whether or not their proprietary products have been accepted by the Council and if not, why not. Now a new Food, Drug and Cosmetic Act has just become effective, and again some suggest that there may be little need for the Council on Pharmacy and Chemistry. The new Food, Drug and Cosmetic Act has been a decided advance, but mainly in the field of drugs sold for self medication or, as currently termed, for "over the counter" sales. The licensing bill for new drugs is intended to determine the harmfulness of the drug. Congress did not give the Food and Drug Administration power to determine

1. The original members of the Council were Arthur R. Cushny,* C. Lewis Diehl,* C. S. N. Hallberg,* Robert A. Hatcher, L. F. Kebler, J. H. Long,* F. G. Novy, W. A. Puckner,* Samuel P. Sadtler,* J. O. Schlotterbeck,* George H. Simmons,* Torald Sollmann, Julius Stieglitz,* M. I. Wilbert * and H. W. Wiley.* Those whose names are followed by an asterisk are deceased.

whether or not a drug is a worth while addition to materia medica. Congress, in enacting the Wheeler-Lea Act and the Food, Drug and Cosmetic Act, has also realized the necessity of expert medical opinion. More and more, no doubt, the opinions of the Council will increase in importance. Those firms which have been following the leadership of the Council have already found that it is much easier to comply with the new Food, Drug and Cosmetic Act and the Wheeler-Lea Act in the case of their accepted medicaments than have some firms which have tried to ignore the Council by extolling nonaccepted preparations.

The Board of Trustees has increased frequently the personnel of the headquarters staff,[2] which carries out the executive work. The unselfish service of the Council members and the accomplishments of the Council merit the unfailing continued support of the medical profession.

HEALTH AT THE NEW YORK FAIR IN 1940

The announcement, just released, that the Medicine and Public Health Building at the New York World's Fair will reopen for the 1940 season on May 11 under the direction of the American Museum of Health is gratifying. Undertaken last year as an idealistic experiment, the medical and public health exhibits at the New York World's Fair enter the new season with a background of proved success. More than 7,500,000 visitors were clocked in a daily check on attendance. This breaks the record in the field previously held by the International Hygiene Exposition in Dresden in 1911 with 5,500,000. Every third World's Fair visitor came to see these exhibits, demonstrating the intense interest of people in their health even in competition with extravagant presentations of industrial enterprises.

In assuming direction of the medical and public health exhibits the American Museum of Health will maintain the same policy that guided the planning of the exhibits last season. With the backing and cooperation of the medical profession, each exhibit will present with scientific accuracy the important fundamentals and noteworthy developments in medical science. There will be no exploitation of commercial products or organizations. The ethical pharmaceutical houses and noncommercial organizations which participated in the 1939 exhibit have expressed their willingness to continue their exhibits under this policy, which brought them so much public good will.

More than one and a quarter million dollars was expended in the presentation last year. Although it was designed primarily for the general public, professional visitors last year found many points of interest. Among them were such exhibits as those on allergy, the pneumonia exhibit demonstrating serum therapy and sulfapyridine, the scientific exhibit of the Rockefeller Institute on the newest discoveries in the virus field, the famous Carrel-Lindbergh method of maintaining life in entire organs when outside the body, and the introduction to such new diseases as equine encephalomyelitis. Of interest to the general public, professional visitors and especially medical students was the effective exhibit on medical education, sponsored by the American Medical Association. One of the best attended exhibits in the Hall of Medical Science, this exhibit presented a concise yet comprehensive picture of the varied elements in a medical education and the high standards in medical training prevalent in this country. The Association was responsible also for another popular feature: the decorative and educational murals on the main aisle in this hall. These murals, depicting the history of the advancement of medical science, were financed by the Association and executed by artists of the Federal Art Project. Members of the American Medical Association should plan definitely to visit the Medicine and Public Health Building during the annual session of the Association to be held this year in New York.

2. Physicians may be interested to know that this staff consists of eight men and twelve women. In addition, the A. M. A. Chemical Laboratory, composed of four Ph.D chemists, besides the director and two assistants, devotes most of its time to the work of the Council. The membership of the Council consists of eighteen individuals. The Council carries on its work by means of a weekly bulletin containing from fifty to a hundred pages, and the members all return their votes and comments within a week after they have been received.

Current Comment

ALLOTMENT OF FEDERAL FUNDS FOR PUBLIC HEALTH SERVICES

The Surgeon General of the United States Public Health Service, with the approval of the Federal Security Administrator, has recently revised the regulations under which federal funds authorized by the Social Security Act for establishing and maintaining adequate public health services are to be distributed for the fiscal year 1940.[1] Allotments amounting to 29.1 per cent of the available appropriations will be made to the several states in the ratio which the population of each state bears to the population of the United States as shown by the Census Bureau 1937 midyear population estimates. Allotments amounting to 41.8 per cent of available appropriations will be made to the several states on the basis of (1) the ratio which the mean annual number of deaths in each state from pneumonia, cancer and other infectious and parasitic diseases, except influenza and syphilis, bears to the total mortality from these causes in the United States as shown by the Bureau of Census Mortality Statistics for the four years 1931-1934; (2) prevalence of malaria, hookworm disease, trachoma, typhus fever and similar geographically limited diseases, special industrial hazards and other conditions that result in an inequality of exposure to these hazards among the states; (3) special conditions which create unequal burdens in the administration of equal public health services among the states indicated by the relative per capita cost of the operation and maintenance of state governmental services as shown by the Statistical Abstract of the Depart-

1. 5 Federal Register 22.

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ment of Commerce for the years 1929-1933, and (4) the need for regional training centers. Allotments amounting to 29.1 per cent of available appropriations will be made to the several states on the basis of the financial needs of such states, "which is determined to be the ability of the state to raise revenue expressed indirectly in terms of differences in per capita five year mean income as computed by the National Industrial Conference Board." To be eligible to receive any of these federal funds, a state must submit a comprehensive statement of the state health organization, programs, appropriations and budgets, including all the activities maintained through local, state or federal funds under the supervision of or in cooperation with the state department of health. A state also must submit and have approved a proposed plan for extending and improving the administrative functions of the state department of health, including a state plan for a merit system of personnel administration and a proposed plan for extending and improving county, district and city health services. Except as revised by the new regulations, the regulations promulgated by the Surgeon General May 23, 1939,[2] for the distribution of federal funds for public health services, remain in effect. There would seem to be here an attempt toward appropriation where need exists and where trained personnel are available.

THE RELATION OF BRUCELLOSIS TO HODGKIN'S DISEASE

Recent observations by Parsons, Poston and Wise,[1] of the departments of pathology and bacteriology of Duke University, direct attention to the relation between chronic brucellosis and Hodgkin's disease. Only reports of a more or less preliminary nature are available; nevertheless these present the question clearly. In the cases studied the morphologic changes were characteristic of Hodgkin's disease, while Brucella (porcine or bovine) was obtained in cultures taken of the enlarged glands and in the one fatal case also of other structures. The cases may be spoken of as instances of "chronic brucellosis which presented a clinical and histologic picture strikingly similar to that of Hodgkin's disease." The microscopic changes include complete destruction of the normal architecture of lymph nodes, eosinophilia, areas of fibrosis and production of large, pale mononuclear cells as well as of giant cells of the Dorothy Reed or Sternberg type. The problem is presented whether this type of reaction can be caused by chronic brucella infection, that is to say whether Hodgkin's disease as the term now is used includes manifestations of chronic glandular brucellosis. This and related problems demand and no doubt will be subjected to further investigation in various places. Here it may be noted now that, while cultures of the lymph nodes studied by the Duke observers yielded Brucella, the serum of the patients concerned did not agglutinate Brucella. Other immune tests also were negative. The importance of this observation is a matter for future determination but it may be of fundamental as well as practical significance. It appears that in certain forms of chronic brucellosis negative immune reactions do not exclude brucella infection; also that in cases diagnosed clinically as Hodgkin's disease microscopic examination may not tell the whole story—competent brucella cultural studies will be needed whatever the relation of brucellosis to Hodgkin's disease eventually is determind to be. The work under consideration is certain to create a new interest in chronic brucellosis and in Hodgkin's disease which there is good reason to hope may lead to a better understanding of the nature of chronic infectious granulomatous processes.

2. 4 Federal Register 2165.

1. Parsons, P. B., and Poston, Mary A.: The Pathology of Human Brucellosis: Report of Four Cases with Autopsy, South. M. J. 32:7 (Jan.) 1939. Parsons, P. B.; Poston, Mary A., and Wise, Bowman: Pathology of Human Brucellosis, Am. J. Path. 15:634 (Sept.) 1939.

DIETARY IMMUNITY

Resistance to toxic or infectious agents apparently varies with nutritional conditions. According to Holt and Meyer,[1] of the Department of Pediatrics of Johns Hopkins University, this nutritional variation in toxin resistance is relatively specific, a diet increasing resistance against one toxic agent, for example, causing no change in resistance to a second toxic factor. In order to study the effect of diet on toxin resistance, the Baltimore clinicians placed parallel groups of carefully selected young rats on four qualitative variations of the same basic diet. Each variation contained adequate amounts of all known food factors, including vitamins and salts. The diets differed from one another solely in the relative amounts of protein (casein), carbohydrate (dextrose) and fat (lard). At the end of from two to four weeks on these diets all four groups were tested in parallel for their resistance to toxic agents, the test dose being so selected as to give about 60 per cent mortality in the group of rats maintained on the routine stock diet. In four groups tested by a subcutaneous injection of 0.6 Gm. of phenol per kilogram of body weight, for example, no consistent difference was noted between the mortality rates of the stock group and the groups on high fat or high carbohydrate diets. The group given a superabundance of protein in their daily rations, however, showed a mortality rate only about half of that in the control group. A high protein diet therefore increases phenol resistance. Quite different data were obtained in the four groups tested with 7 mg. of sodium cyanide per kilogram. Here the average mortality was 65 per cent in the three groups on high protein, high carbohydrate and the stock diet. The mortality, however, was only about half that, 33 per cent, in the group on a high fat diet. A superabundance of fat, therefore, causes an increased cyanide resistance. Even more striking differences were noted in the four groups tested with diphtheria toxin. Here the test dose was so selected as to kill two of three control rats in five days. Groups on the stock diet, high carbohydrate diet and high fat diet gave mortality percentages varying from 63 to 68 per cent in their series. In contrast, the high protein group showed a mortality rate of but 16 per cent. Normal antitoxic resistance to diphtheria toxin, therefore, is increased fourfold in effectivity on a high protein diet. No explanation of these quasispecificities have as yet been offered by the Baltimore clinicians.

1. Meyer, A. R.: Proc. Soc. Exper. Biol. & Med. 41:402 (June) 1939.

ORGANIZATION SECTION

MESSAGE OF PRESIDENT ROOSEVELT ON CONSTRUCTION OF HOSPITALS IN NEEDY AREAS AND TEXT OF BILL INTRODUCED BY SENATOR WAGNER

Following is a copy of a message from the President to the Congress of the United States (House Document 604; *Congressional Record*, January 30). Following the receipt of the message, Senator Wagner, on behalf of himself and Senator George, of Georgia, introduced Senate Bill 3230 "to promote the national health and welfare through appropriation of funds for the construction of hospitals," which was referred to the Senate Committee on Education and Labor. Representative Lea, of California, introduced a companion bill in the House of Representatives, H. R. 8240, which was referred to the House Committee on Interstate and Foreign Commerce.

THE PRESIDENT'S MESSAGE

To the Congress of the United States:

In my special message to the Congress on January 23, 1939, I expressed my concern over the inequalities that exist among the states as to health services and resources with which to furnish such services. With that message I transmitted the report and recommendations on national health prepared by the Interdepartmental Committee to Coordinate Health and Welfare Activities and recommended it for careful study by the Congress.

Conditions described a year ago are substantially unchanged today. There is still need for the federal government to participate in strengthening and increasing the health security of the nation. Therefore, I am glad to know that a committee of the Congress has already begun a careful study of health legislation. It is my hope that such study will be continued actively during the present session, looking toward constructive action at the next. I have asked the Interdepartmental Committee to Coordinate Health and Welfare Activities to continue its studies.

In order that at least a beginning may be made I *now* propose for the consideration of the Congress a program for the construction of small hospitals in needy areas of the country, especially in rural areas, not now provided with them. Hospitals are essential to physicians in giving modern medical service to the people. In many areas present hospital facilities are almost nonexistent. The most elementary health needs are not being met.

The provision of hospitals in the areas to which I refer will greatly improve existing health services, attract competent doctors and raise the standards of medical care in these communities. The new hospitals should serve the additional purpose of providing laboratory and other diagnostic facilities for the use of local physicians, as well as accommodations for local health departments.

The proposed hospitals should be built only where they are most needed; they should not be constructed in communities where public or private institutions are already available to the people in need of service even if these institutions are not up to the highest standards. To insure proper location and good standards of operation, approval of hospital construction projects should be given by the Surgeon General of the Public Health Service, with the advice of an advisory council consisting of outstanding medical and scientific authorities who are expert in matters relating to hospital and other public health services.

Projects proposed for consideration should be submitted by responsible public authorities and should include assurance that adequate maintenance will be provided. Approval of projects should be preceded by careful survey of existing local hospital facilities and needs. Standards for organization, staff and continuing operation should be established by the Surgeon General, with the advice of the advisory council. A competent hospital staff and satisfactory standards of service should be required, including medical, surgical and maternity service. When indicated, special provisions should be made for the care of the tuberculous. In many areas of the South, the present acute needs for the care of Negro patients should also be met.

I suggest that these hospitals be simple, functional structures, utilizing inexpensive materials and construction methods. The facilities of the Federal Works Agency should be utilized in the planning and execution of the hospital projects. Title to these institutions should be held by the federal government, but operation should be a local financial responsibility.

I recommend to the Congress that enabling legislation for this program be enacted and that a sum of between $7,500,000 and $10,000,000 be appropriated to the Public Health Service to inaugurate the program during the next fiscal year.

I am confident that even this limited undertaking will bring substantial returns in the saving of lives, rehabilitation of workers, and increased health and vigor of the people.

This suggestion is not a renewal of a Public Works program through the method of grants in aid. The areas which I have in mind are areas so poor that they cannot raise their share of the cost of building and equipping a hospital. Yet I believe that many of such communities have enough public-spirited citizens with means, and enough citizens able to pay something for hospital treatment, to care for operating costs of a hospital, provided they do not have to pay for its original construction and equipment, or to pay annual interest and amortization on borrowed money. Treatment in such a hospital would, of course, be available to men, women and children who literally can afford to contribute little or nothing toward their treatment.

One of the important difficulties in such areas at the present time is that young doctors hesitate to practice general medicine or surgery because of the utter lack of hospital or laboratory facilities. One cannot blame them.

In such areas also costs of construction are generally low and many local materials can be used. It is my belief that with the assistance of the Work Projects Administration the cost of building and equipping a hundred bed hospital can be kept down to between $150,000 and $200,000. This means that we could build fifty such hospitals for between $7,500,000 and $10,000,000.

This is not an ambitious project. This principle should not be extended to government gifts to communities which are financially able to build their own hospitals. It is an experiment in the sense that the nation will gain much experience by undertaking such a project.

At the very least it will save lives and improve health in those parts of the nation which need this most and can afford it least.

FRANKLIN D. ROOSEVELT

The White House,
January 30, 1940.

TEXT OF S. 3230, INTRODUCED BY SENATOR WAGNER

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Hospital Act of 1940."

SEC. 2. For the purpose of assisting states, counties, health or hospital districts, and other political subdivisions of the states in providing better health and medical services through the provision of needed hospital facilities to serve rural communities and economically depressed areas, there is hereby authorized to be appropriated to the Public Health Service for the fiscal year ending June 30, 1941, the sum of $10,000,000 and for each

fiscal year thereafter such sums as the Congress may deem necessary for carrying out the purposes of this act. Amounts appropriated under this act shall be available until expended.

SEC. 3. States, counties, cities, other political subdivisions or parts thereof alone or in combination wishing to participate in the benefits contemplated by this act shall make application to the Surgeon General of the Public Health Service (hereinafter referred to as the Surgeon General). Said applications shall contain information necessary to establish the existence of need for hospitals, to give assurance acceptable to the Surgeon General that such hospitals will be made available under appropriate conditions to all groups of the population, will be maintained in good repair, and will be utilized in furnishing service of satisfactory quality, in accordance with regulations hereinafter authorized to be prescribed.

SEC. 4. There is hereby established the National Advisory Hospital Council (hereinafter referred to as the "Council") to consist of the Surgeon General as chairman and six members to be appointed by the Surgeon General with the approval of the Federal Security Administrator. The six appointed members shall be selected from leading medical or scientific authorities who are outstanding in matters pertaining to hospitals and other public health services. Each appointed member shall hold office for a term of three years except that (1) any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term, and (2) the terms of office of the members first taking office shall expire, as designated by the Surgeon General at the time of appointment, two at the end of the first year, two at the end of the second year, and two at the end of the third year after the date of the first meeting of the Council. No appointed member shall be eligible to serve continuously for more than three years but shall be eligible for reappointment if he has not served as a member of the Council at any time within twelve months immediately preceding his reappointment. Each appointed member shall receive compensation at the rate of $25 per day during the time spent in attending meetings of the Council and for the time devoted to official business of the Council under this act, and actual and necessary traveling and subsistence expenses while away from his place of residence upon official business under this act.

SEC. 5. The Council is authorized to advise the Surgeon General with reference to the carrying out of the provisions of this act, including—

(*a*) The review of applications for hospitals submitted in accordance with and meeting the requirements of section 2 and recommendation of such projects as in its opinion are needed, will be adequately maintained, and otherwise will fulfil the requirements of this act;

(*b*) The formulation of standards which are necessary to insure proper conduct of the hospitals and care of persons served by the hospitals;

(*c*) The formulation of rules and regulations necessary to carry out the provisions of this act;

(*d*) The review of reports and inspections and, when necessary, the making of inspections with reference to professional service and standards of maintenance of the hospitals.

SEC. 6. In carrying out the purposes of this act, the Surgeon General is authorized and directed, after consultation with the Council—

(*a*) To conduct, assist and foster studies and surveys with respect to needs for hospitalization and problems of hospital operation;

(*b*) To approve hospital projects, to designate the location, type, equipment and size of hospitals, and to allocate available funds to such approved projects;

(*c*) To provide training and instruction of personnel who will be required in connection with the hospitals;

(*d*) To cooperate with state and local health and welfare authorities and with professional agencies;

(*e*) To secure reports and to make inspections with respect to professional service and standards of maintenance of the hospitals and other matters pertinent to carrying out the purposes of this act;

(*f*) To adopt such additional means as may be found necessary or appropriate to carry out the provisions of this act, including the safeguarding of the quality of service furnished in hospitals;

(*g*) To make, with the approval of the Federal Security Administrator, such rules and regulations as may be necessary to carry out the provisions of this act;

(*h*) To lease hospital projects when completed to the applicant for an indefinite period, the consideration for such lease being the maintenance and operation of said hospital in accordance with the provisions of this act. If at any time said maintenance and operation by the applicant shall fail to meet such provisions, the lease shall be terminated by the Surgeon General on six months' notice.

SEC. 7. When a hospital project has been approved by the Surgeon General, in accordance with the provisions of this act, it shall be certified by the Federal Security Administrator to the Federal Works Agency for construction and there shall be allocated and transferred to the Federal Works Agency, out of funds appropriated pursuant to this act, so much of the appropriation as may be determined to be available for the project, and the Federal Works Agency is authorized to expend such sums for the planning, execution and construction of the project and pertinent facilities, including administrative expenses, site acquisition, the preparation of working drawings and specifications, award of all necessary contracts and supervision of construction; and the Federal Works Agency is further authorized to expend out of appropriations available to it, in accordance with the purposes thereof, such sums as may be necessary for the completion of the project but without regard to specific limitations imposed on the use thereof. Title to the properties so constructed, and to the equipment installed therein, and to the land on which they are located, shall be in the United States.

SEC. 8. The Federal Security Administrator is authorized to accept on behalf of the United States gifts of money, equipment and land to be utilized in carrying out the purposes of this act.

SEC. 9. The President is authorized to allocate from funds appropriated pursuant to this act, for the fiscal year ending June 30, 1941, a sum for all necessary expenses of the Public Health Service in administering the provisions of this act, including the training of personnel; and there is hereby authorized to be appropriated in each succeeding fiscal year such amounts as the Congress may deem necessary for such purpose.

SEC. 10. (*a*) There is hereby authorized to be appointed in the Public Health Service, in accordance with applicable law, such additional commissioned officers and other personnel as may be necessary in carrying out the provisions of this act.

(*b*) On recommendation of the Surgeon General, the Federal Security Administrator shall submit to the Bureau of the Budget on or before September 15 of each year a list of approved hospital projects under this act and cost estimates thereof, together with such other data as may be necessary for the preparation of the budget estimates.

(*c*) This act shall not be construed as superseding or limiting (1) the functions, under any other act, of the Public Health Service or any other agency of the United States relating to the prevention, diagnosis and treatment of disease; or (2) the expenditure of money therefor.

(*d*) The term "state" as used in this act shall include also the territories and insular possessions of the United States.

(*e*) The term "hospital" as used in this act shall include the physical facilities necessary for the prevention, diagnosis or treatment of disease, and for the protection of the public health.

(*f*) The Surgeon General shall include in his annual report for transmission to Congress a full report of the administration of the act, including a detailed statement of receipts and disbursements.

(*g*) This act shall take effect thirty days after the date of its enactment.

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AN ANALYSIS OF S. 3246, A BILL TO AUTHORIZE LOANS FOR HOSPITALS, WATER, SEWER, STREAM-POLLUTION CONTROL, AND RELATED PROJECTS AND FACILITIES

PREPARED BY THE BUREAU OF LEGAL MEDICINE AND LEGISLATION, AMERICAN MEDICAL ASSOCIATION, FEB. 5, 1940

This bill was introduced by Senator Mead, of New York, February 1. It proposes to authorize a federal appropriation of $300,000,000 to remain available until expended to be utilized in making loans to public bodies and nonprofit organizations to finance the construction, equipment, repair, alteration, extension, improvement and "the temporary operation and maintenance for a period not exceeding four years" of:

(1) hospitals, defined to mean any institutions or facilities for the treatment of illness or disease, including any health, diagnostic or treatment center, station, institution or clinic;

(2) water and sewerage works and systems, including treatment plants and any and all constituent facilities thereof;

(3) works and systems for the reduction of pollution in streams; and

(4) related "facilities" necessary or proper to safeguarding the health of the people, where, in the determination of the Administrator of the Federal Works Agency, such "facilities" are now inadequate or nonexistent. (The bill is silent as to what is to be considered a "related facility.")

Of the sum to be authorized, not to exceed $100,000,000 may be devoted to hospital projects and not to exceed $9,000,000 will be made available during the fiscal year ending June 30, 1941, for administrative purposes in carrying out the provisions of the bill.

The bill contemplates that secured loans may be made by the Administrator of the Federal Works Agency to any public body, defined to mean any state, territory, possession or political subdivision, or an instrumentality or agency thereof, and to any organization not operating for profit, and created pursuant to law or under the authority of any public body. Loans will be repayable within a period not to exceed fifty years and will bear interest at the rate of 2 per cent a year.

With particular reference to hospitals, the bill provides that, to the extent not inconsistent with any pertinent state or territorial law, any public body or nonprofit organization receiving a loan for the construction of a hospital or a hospital addition shall, on the request of the Surgeon General of the Public Health Service, make such hospital or hospital addition available to the federal government for operation by it during (1) a state of war or (2) a "national emergency," the public body or nonprofit organization to be compensated therefor in such an amount as the Congress shall determine to be just and reasonable. The bill does not define what shall constitute a "national emergency" nor does it indicate who is to determine the existence of an emergency so as to justify the Surgeon General of the Public Health Service in taking over the operation of a hospital or addition constructed with money made available by the bill.

The bill provides that it may be cited as the "Health Security Act of 1940." The administration of its provisions, however, is to be devolved solely, with the exception noted in the preceding paragraph, on the Administrator of the Federal Works Agency, who will be authorized to prescribe the terms and conditions on which loans may be made. While it relates to health security, it has been referred to the Senate Committee on Banking and Currency, of which Senator Wagner, of New York, is chairman and who himself on February 1 introduced another bill providing for the construction of hospitals, discussed elsewhere in this issue, which bill was referred to the Senate Committee on Education and Labor.

In submitting S. 3246, its author, Senator Mead, said in part:

"I wish to observe at the outset that my bill will in no wise conflict with a similar bill introduced by my distinguished colleague the senior Senator from New York [Mr. Wagner]. It will supplement the program he proposes, and it will permit applicants who otherwise would not be permitted to apply for funds for this purpose to qualify and, in the end, to build hospital facilities." (*Congressional Record*, Feb. 1, 1940, p. 1361.)

Representative Schulte, of Indiana, has introduced a companion bill in the House of Representatives, H. R. 8288, which was referred to the House Committee on Appropriations.

GRADUATE MEDICAL EDUCATION

A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

FLORIDA

Beginning in 1933 the Florida Medical Association has conducted each year a six day graduate short course for physicians. The course consists of six lectures in medicine, surgery, pediatrics and obstetrics and five lectures in gynecology, with the remainder of the time devoted to the clinical specialties. Round table discussions were held in 1934 and 1935. In 1935 there was a symposium on malaria and in 1936 a symposium on respiratory diseases and fractures. Exhibits and demonstrations have been attempted in tuberculosis, radiology, public health and pharmacy.

In 1933 the state medical association appointed a committee on medical postgraduate course. At first there were four and later six members of this standing committee. Representatives were appointed from each of six sections of the state with Dr. T. Z. Cason as chairman since the formation of the committee. The committee men are appointed for a three year period, serving overlapping terms.

The state association has allotted $500 each year for the expenses of the committee's program. Actually less than $300 has been spent of the total amount allotted by the state association over the past seven years, so that the per capita cost of instruction has been only slightly in excess of 50 cents. A registration fee of $5 is charged each year. This is used for paying the traveling expenses of out of state instructors. Since the committee is incorporated, it is financially independent of the state association. Commercial exhibits have not been attempted.

Instructors are selected by the postgraduate committee usually from the faculties of medical schools. It has been the custom to invite speakers for not more than two consecutive years. On the first year's program local University of Florida instructors participated, but since then only out of state physicians have constituted the faculty. Six or seven men are invited from various sections of the country to speak on subjects of current interest. The first four years' courses were held in Gainesville with the University of Florida General Extension Division cooperating. Notices were prepared by the state association's committee and published and distributed by the extension division, the division being compensated for this service. Attendance has ranged from 102 physicians the first year to 136 in recent years. Of the 2,072 physicians licensed in Florida, 1,346 are members of the state medical association.

In 1937 the university extension division continued to publish and distribute programs for the graduate short course, and the meeting was held in Orlando for the first time. Definite hours were assigned to each instructor, so that the teaching schedule was arranged from 8 a. m. to 5:30 p. m. each day. Attendance increased over previous years. Since 1937 meetings have been held at Daytona Beach.

In 1938 and 1939 the state board of health cooperated with the state medical association, replacing the extension division of the university. The state board of health published and distributed the programs for the postgraduate committee as well as paid instructors, who discussed such subjects as obstetrics, gynecology, pediatrics and venereal diseases.

In 1939 for the first time a short course of one week's intensive work in diseases of the chest was given in connection with the regular graduate short course. Seventeen physicians enrolled, each paying an additional fee of $5. Hospital facilities at Daytona Beach and Orlando were utilized so that registrants might have an opportunity to study patients under the supervision of a competent teacher.

Over five years approximately half the membership of the state medical association has attended one or more graduate sessions. From a representative group of physicians who were questioned regarding their interest in the graduate short course, it was noted that about two of every five had attended the course given in Florida, about one of six engaged in graduate study elsewhere, and less than one of eight found some reason for not attending the state association's course. The majority favored the present plan and schedule. A number requested additional instruction in such subjects as urology, orthopedic surgery and radiology.

The Florida State Board of Health attempted in January and February 1937 to promote a program of graduate study in six cities in the northern section of the state. Six meetings were held at each locality. These section meetings were sponsored by each local medical society in cooperation with the state association's committees on maternal welfare and child health. One lecture in obstetrics and one in pediatrics were given each day and time was provided for consultations. Twelve out of state instructors were engaged. The same lectures were given on succeeding days throughout each week in each of the six cities. No registration fees were charged. The program was financed with federal funds.

During the past year the committee on medical postgraduate course has taken an active interest in the annual meetings of district societies throughout the state. A member of the state association's committee from each district represents the committee in his own district meeting. It is anticipated that some effort will be made to coordinate the programs of the district meetings with the programs of the annual graduate short course of the state association.

The Florida Tuberculosis and Health Association sponsored a three day course in the Florida State Hospital at Orlando in 1939. While the instruction was designed especially for health officers, others were invited to attend. During the past three years, instruction in tuberculosis for Negro physicians has been sponsored by the state tuberculosis and health association with the financial assistance of the Rosenwald Fund.

NORTH CAROLINA

A feature of the North Carolina plan of graduate education which is most appreciated by physicians of the state is the method of teaching by clinical demonstrations utilizing patients with diseases existing in the physician's own community—their problems of everyday practice. The physician sees modern diagnostic procedures applied at the home and his patient sees them and learns to appreciate and demand careful systematic examination. This tends to raise the standard of medical practice in the community.

Since the problem of postgraduate training is one primarily of education and only secondarily one of public health, in North Carolina it has been considered to be chiefly the concern of the state university rather than the state board of health, and as a result it has been undertaken largely by the university. The organization of classes, the planning of circuits for instructors and other executive work has been carried out by and financed by the university extension division. More strictly medical problems such as the selection of instructors and outline of the course have been in the hands of the medical school administration.

THE UNIVERSITY OF NORTH CAROLINA AND THE NORTH CAROLINA STATE BOARD OF HEALTH

Extension training for practicing physicians of North Carolina originated in Wilson County in 1916. Dr. W. S. Rankin, state health officer and secretary of the board of health, Mr. Chester D. Snell, director of the Extension Division of the University of North Carolina, and Dr. I. H. Manning, dean of the medical school, were concerned with the early development of the plan, which has been described briefly as follows: A lecturer is elected to discuss a subject of interest to physicians practicing in an essentially rural state. Definite days are fixed when the instructor is to appear at previously selected places on the circuit plan. He may spend from twelve to sixteen weeks in the state, appearing the same day each week at the same center. An eastern and a western circuit were developed for the state in 1916, the first year. There were twelve groups of physicians meeting in as many places on the two circuits. Since instruction in pediatrics was most desired, this subject was given by two members of medical faculties from outside the state. After an introductory lecture, from one to ten patients would be brought in for diagnosis, demonstration and discussion by the physicians enrolled in the course. One hundred and seventy-nine physicians registered the first year. The attendance averaged 76 per cent.

After an interruption during the World War period the courses were resumed, and in 1922 twelve localities were supplied by two out of state lecturers in the subject of internal medicine. The initial plan of organization and administration was followed. One hundred and ninety-nine physicians registered, attending 84 per cent of the lectures. Twenty-four groups on four circuits were addressed in 1923. The subjects were internal medicine and pathology. Four out of state physicians participated. Three hundred and eighty enrolled and the attendance continued at 84 per cent. In 1924 and 1925 pediatrics was repeated in twelve localities during each year. Two physicians constituted the traveling faculty in 1924 and three in 1925. The first year 176 physicians registered, the percentage of attendance being 82. In the second year 159 enrolled, with 76 per cent attendance. In 1926 and 1927 instruction in internal medicine was given and pediatrics was repeated in 1927. Three out of state physicians were engaged in 1926 and two in 1927. Attendance was 102 the first year and eighty-six the second year. In 1928 a course in physical diagnosis was given to seven groups of sixty physicians. One out of state instructor was responsible for this course.

During the first eight years eight courses were offered to ninety-one groups of physicians, meeting in forty-four centers located in forty-one counties of the state. Enrolment totaled 905 physicians. There are 2,663 licensed physicians in the state, of which number 1,801 are members of the Medical Society of the State of North Carolina.

Fourteen out of state instructors were engaged over this period. Physicians who enrolled for instruction paid $30, which was sufficient to finance the traveling expenses and honorariums of instructors for a course of twelve or thirteen sessions. A minimum of fifteen registrants was required under this plan. A member of the Extension Division of the University of North Carolina accompanied the lecturer on his first appearance, introduced him to his audience and took complete charge of the financial arrangements. This procedure has been outlined by Mr. Chester Snell, director of the university extension division, as follows:

> In the fall of 1921 I sent a letter outlining our scheme to the secretaries of all the county medical societies in the state, with the request that they bring our proposition up for discussion at their meetings and report back to me. The best responses came from the societies which had taken the work in 1916. In the spring of 1922 I obtained a list of all the doctors within 50 miles of the six selected cities, in the two sections, and sent to each an explanatory letter and an application blank. About forty were enrolled in this way. Next I interviewed personally a large number at the annual convention of the state medical society, which occurred later in the spring, and, following this, I made a personal office-to-office canvass, eventually signing up enough to make the total for the two circuits 180. Just before the first meeting I sent letters to all of the doctors who had been on the former mailing list, reminding them of the dates on which the first meetings were to be held and again soliciting their cooperation. Exactly 198 physicians enrolled, out of a total of about 450 approached. About 85 per cent of the general practitioners could be classified as interested or enthusiastic when first seen. The main difficulty in getting

an early response was due to the fact that when I made my field trip I could not announce the names of the instructors, as they had yet to be selected. Difficulty was occasionally experienced in overcoming, on the part of the more skeptical, a tendency to believe that the university was attempting to "put something over"; but we were usually able to meet this attitude successfully by a thorough explanation of our plan. As further evidence of good faith, we promised a refund to those enrolled in case our receipts more than covered the instructors' expenses. Each physician paid $30 for the series and later received a refund of over $3. I believe that, in the future, less difficulty will be experienced in organizing similar classes, for the work is now so firmly established that it should sell itself.

After a lapse of several years the statewide graduate program was revived, which had several of the features of the initial plan. The state board of health administered the program and lent financial aid with federal funds in 1935-1936. An advisory committee was legally constituted to represent the medical profession. This committee was composed of the president and secretary of the Medical Society of the State of North Carolina, the chairmen of the society's committees on maternal and child health, on obstetrics and gynecology and of its section on pediatrics, the chairman of the North Carolina chapter of the American Academy of Pediatrics and of a similar body in obstetrics, the president of the North Carolina Society of Pediatrics, the managing director of the state tuberculosis association and the president and secretary of the state health officers' association.

Beginning in 1935 a series of five illustrated lectures in obstetrics was given in each of the councilor districts of the state medical society. The extension division of the university again administered the course and the dean of the medical school provided instructors. The lectures were held in the fall of 1935 and in the spring and summer of 1936. There were ten sections of the state visited. The first three series were conducted by one instructor from out of the state, the next five by another and the last two by a third physician. Some of the lectures were illustrated with movie films. The sessions began at 2 p. m. and continued for three hours. There was a lecture followed by a showing of film and finally a general discussion. Approximately 600 practicing physicians received some instruction under this plan.

In the fall of 1936 the extension division of the university, the school of medicine and physicians practicing in the state resumed extension training similar to that attempted twenty years before. Under the new system circuits were abandoned in favor of established teaching centers conveniently located for men in general practice. A central committee was formed with the dean of the school of medicine as chairman and with the director of the extension division and Dr. William H. Smith, a member of the postgraduate committee of the state medical society, on this central committee. Before a teaching center is established the plan is approved by the local medical society, which appoints a committee to meet with a representative of the extension division and make local arrangements. An attempt is made to enroll approximately seventy-five physicians at $15 per registrant. With this amount it is possible to employ six or seven lecturers from out of the state. The meetings begin with supper, which is followed by a lecture of one and one half hours' duration, after which there is a general discussion. Sometimes it is possible to hold late afternoon clinics in local hospitals. It has been found that one lecture a week for six times is most agreeable to physicians, many of whom travel great distances to attend a course. Only five areas of the state have had sufficient numbers of physicians to finance this undertaking. Negro physicians also may attend, coming in after supper and paying a smaller fee.

In 1936 eighty-six physicians enrolled for a course in general medicine and pediatrics. A total of 115 physicians attended one or more lectures. In 1937 115 enrolled and 150 attended a series of seven lectures in general medicine at another center. In 1938 four courses were given in as many centers on subjects of general interest with an enrolment of 371 and an attendance of 495 physicians. In 1939 three courses were given in three centers, 292 enrolling and 468 attending one or more lectures. It was possible for physicians either to enroll for the whole course or to pay a smaller fee and attend only lectures of special interest to them.

It is anticipated that it will be possible to extend this type of educational service to the more sparsely settled localities in the state where there are insufficient numbers of physicians to subscribe for a course. For this purpose it is hoped that a surplus will develop which will be sufficient to meet this need.

DUKE UNIVERSITY MEDICAL SCHOOL

Since 1934 Duke University Medical School has offered physicians of the state one or two symposiums each year on different subjects of medicine. The university provides facilities at the medical school for any doctor who wishes to spend a few days, weeks or months reviewing his knowledge of medicine, surgery, obstetrics, pediatrics or other divisions of clinical or preclinical medicine. Medical graduates from any part of the state may attend clinics and demonstrations in the major divisions of medicine on Saturdays from 9 a. m. to 12:30 p. m., and clinical pathologic conferences, which are held on Wednesdays at 5 p. m.

In 1934 there was a three day fracture course, which was the initial effort of the university in this type of postgraduate training. In the fall of 1935 there was a three day course in gastro-enteric disease in which seventeen out of state physicians discussed diagnosis and treatment. In October 1936 there was a symposium on diseases of the heart, circulation and kidney in which sixteen out of state physicians participated. During this month there was a course on pulmonary diseases which was designed for Negro physicians. This course was given in cooperation with the University of North Carolina and Wake Forest College. In November 1937 there was a three day symposium on pediatrics, gynecology and obstetrics. Ten out of state physicians participated. In addition to the lectures in 1937 there were three round table discussions.

The house of delegates of the Medical Society of the State of North Carolina in May 1938 voted to sponsor intensive short courses for practicing physicians to be given at Duke University School of Medicine. A committee was appointed by the society to publicize these courses. Under this plan the university, as outlined above, permits physicians practicing in the state to spend one or more weeks in residence at the university for observing clinical procedures in the major divisions of medicine.

In January 1938 a one day symposium on pneumonia, which also included a technician course, was given. Eight members of the staff at Duke participated and moving pictures were shown. In October 1938 there was a three day symposium on medical problems at Duke University in which ten out of state and a number of North Carolina physicians participated. In January and February 1939 there was a university extension course in medicine in which there was one lecture each week by an out of state physician. Also in January 1939 the one day symposium on pneumonia was repeated, with two speakers participating. In March 1939 there was a two day graduate clinic for the diagnosis and treatment of syphilis. Seven out of state physicians participated.

WAKE FOREST COLLEGE

In January 1930 there was one day of lectures by an out of state physician on gastro-enteric disease. In December 1931 there was a similar lecture on nerve physiology. In December 1933 there was a two day series of talks on the diagnostic and treatment problems of cancer by four out of state physicians. In April 1938 there was a two day symposium and clinic on tumors in which four out of state physicians participated. Both the 1933 and 1938 discussions were well attended. Approximately 125 physicians enrolled for the 1938 session.

SOUTHERN PEDIATRIC SEMINAR

Each year in Saluda, N. C., is held the Southern Pediatric Seminar. A two weeks course of instruction is given in July or August every year in pediatrics and occasionally obstetrics is included. Lectures, clinics and symposiums are given in a local hospital. Instructors are chosen from medical schools of the South. Attendance in 1938 was forty-seven. There is a registration fee of $25.

OFFICIAL NOTES

SPECIAL BLUE NETWORK BROADCAST

February 21 from 9 to 9:30 p. m. central standard time (10 to 10:30 eastern standard time, 8 to 8:30 mountain time and 7 to 7:30 Pacific time) there will be a special broadcast by the American Medical Association and the National Broadcasting Company over seventy stations of the Blue network. The subject will be "Pasteur Conquers Rabies."

The broadcast will be based on an article "Watch Your Dog!" appearing simultaneously in *Hygeia* and on official reports dealing with the seriousness of the rabies situation in the United States.

Special features of the program will be music arranged by Don Markotte of the National Broadcasting Company Music Library from the score which accompanied the motion picture production of Louis Pasteur, starring Paul Muni. This music is made available through the special courtesy of Warner Brothers. An augmented N. B. C. orchestra, directed by Joseph Gallicchio, will render the music. Dramatizations taken from the life of Pasteur and arranged for radio by William J. Murphy will be enacted by a specially selected cast of N. B. C. radio actors, under the direction of J. Clinton Stanley, director of the series Medicine in the News.

A limited number of tickets for admission to the studio will be available to physicians in Chicago and vicinity. Tickets will be limited to two per application. Requests should be sent by mail to the Bureau of Health Education, American Medical Association, 535 North Dearborn Street, Chicago, enclosing a stamped, self-addressed envelop. Telephone requests cannot be received. Applications will be filled in the order in which they are received until all the tickets have been distributed.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Bills Introduced.—S. 3230, introduced by Senator Wagner, New York, for himself and Senator George, of Georgia, and H. R. 8240, introduced by Representative Lea, California, propose to authorize for the fiscal year ending June 30, 1941, the sum of $10,000,000 and for each fiscal year thereafter such sums as the Congress may deem necessary, for the purpose of assisting states, counties, health or hospital districts and other political subdivisions of the states in providing better health and medical services through the provision of needed hospital facilities to serve rural communities and economically depressed areas. S. 3246, introduced by Senator Mead, New York, and H. R. 8288, introduced by Representative Schulte, Indiana, propose to authorize an appropriation of $300,000,000 from which to make loans to public bodies and nonprofit organizations for hospital, water, sewer, stream-pollution control, and related projects and facilities. H. R. 8235, introduced by Representative Miller, Connecticut, proposes that persons who served during the World War with the American Red Cross, Knights of Columbus or any other auxiliary unit recognized by the Administrator of Veterans' Affairs shall be furnished the same domiciliary care and medical and hospital treatment as furnished by law or veterans' regulations to veterans of the World War suffering from non-service connected disabilities. H. R. 8238, introduced by Representative Summers, Texas, proposes to provide for the incorporation of the United Spanish War Veterans, which includes in its membership acting assistant surgeons, contract physicians, dentists and veterinary surgeons.

DISTRICT OF COLUMBIA

Bills Introduced.—H. Res. 370, submitted by Representative D'Alesandro, Maryland, proposes to authorize an investigation of the conditions obtaining at the Home for the Aged and Infirm at Blue Plains. S. 3221, introduced by Senator King, Utah, proposes to regulate, in the District of Columbia, the disposal of certain refuse.

STATE MEDICAL LEGISLATION

Kentucky

Bill Passed.—H. 104 passed the House, January 30, proposing to require a physician or other person legally permitted to attend pregnant women to take or cause to be taken a specimen of blood for serologic tests for syphilis from such women as soon as he or she is engaged to attend the woman and has reasonable grounds for suspecting that pregnancy exists.

Mississippi

Bill Introduced.—H. 150 proposes to prohibit the retail sale or distribution of any drug or medicine that contains any quantity of any substance such as barbituric acid, except on the written prescription of a physician, dentist or veterinarian.

WOMAN'S AUXILIARY

Indiana

The board of directors of the auxiliary to the Indiana State Medical Association met in Indianapolis November 2. Plans for the year were presented by Mrs. W. E. Tinney, president, and by the chairmen of standing committees. Dr. Norman M. Beatty, chairman of the Committee on Public Policy and Legislation of the Indiana State Medical Association, discussed public relations and policies of the state association.

The auxiliary to the Vigo County Medical Society met in Terre Haute October 12. Mrs. J. R. Yung, hostess, spoke on Mexico. Forty members were present. The auxiliary gave a benefit bridge party November 6 to raise funds for occupational therapy work for children patients in the Union and St. Anthony's hospitals.

Nebraska

The auxiliary to the Lancaster County Medical Society met in Lincoln October 2 with thirty-five members in attendance. Mrs. Charles C. Tomlinson, Omaha, addressed the group. Mrs. Walter L. Albin addressed the meeting on November 6 on the subject of her recent world tour. A project of the auxiliary is placing *Hygeia* in every school in the city of Lincoln.

West Virginia

The auxiliary to the Cabell County Medical Society met at Huntington November 9. Thirty-two members were present. Dr. A. E. McClue, Charleston, discussed the Social Security Act, and Dr. Raymond Sloan, Huntington, conditions among the indigent.

The auxiliary to the Kanawha Medical Society met in Charleston November 14, with thirty-eight members in attendance. Dr. R. O. Halloran, Charleston, was speaker, and articles from *Hygeia* were reviewed.

Mrs. V. E. Holcombe, president of the auxiliary to the West Virginia State Medical Association, addressed auxiliaries to the following county societies: Harrison, at Clarksburg, November 2; Logan, at Earling, November 7, and McDowell, at Welch, November 8.

The auxiliary to the Parkersburg Academy of Medicine met November 14, with twenty-five in attendance. Dr. W. A. Beracqua spoke on the subject "Becoming Acquainted with Social Agencies."

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Arkansas Basic Science Act Constitutional. — The Supreme Court of Arkansas, January 15, in the case of *Strond v. Crow*, upheld the constitutionality of the basic science act enacted by the legislature of that state in 1929. The case was prosecuted by the members of the executive board of the Arkansas Medical Society, suing in their official capacities and individually as licensed physicians, to enjoin the chiropractic board from issuing chiropractic licenses to persons not possessing basic science certificates, which it had been doing, and to enjoin certain chiropractors from continuing the practice of chiropractic under the purported authority of licenses issued to them by the chiropractic board contrary to the requirements of the basic science act. To the contention of the chiropractors that they did not treat disease and hence were not amenable to the requirements of the basic science act, the Supreme Court answered "If he [the chiropractor] does not treat diseases, what does he treat? Does he manipulate the vertebrae of a well person just for the pleasure of such well person? There would be no excuse for any regulatory chiropractic laws, if they were not engaged in treating disease." The court further held that the basic science act was not invalid because it required chiropractors to be proficient in bacteriology and pathology, two subjects not included in the chiropractic act, or because it exempted from its requirements dentists, nurses, midwives and certain others. The trial court had dismissed the complaint but the Supreme Court said that if chiropractors want to obtain licenses in Arkansas they must first comply with the basic science act. Peter A. Deisch, Esq., of Helena, was attorney for the medical society.

CALIFORNIA

Personal.—Dr. William A. Swim, Los Angeles, has been appointed a member of the state board of medical examiners, succeeding Dr. John MacLean, whose term expired. — Dr. Anthony J. J. Rourke, assistant director, University Hospital, Ann Arbor, Mich., has been appointed medical superintendent of the Stanford University Hospitals, San Francisco, and assistant professor in the university school of medicine.

DISTRICT OF COLUMBIA

Regional Meeting on Pediatrics.—The annual meeting of region 1 of the American Academy of Pediatrics will be held April 4-6 at the Mayflower Hotel, Washington, with District members of the academy acting as hosts.

Joint Meeting of Gynecologists.—Four honorary fellowships were announced by the Washington Gynecological Society at its joint meeting in Washington with the Obstetrical Society of Philadelphia, January 18. The fellowships were conferred on Drs. Jennings C. Litzenberg, professor of obstetrics and gynecology, University of Minnesota Medical School, Minneapolis; Dr. Nicholson J. Eastman, professor of obstetrics, Johns Hopkins University School of Medicine, Baltimore; Marvin Pierce Rucker, Richmond, Va., and Norris W. Vaux, professor of obstetrics, Jefferson Medical College, Philadelphia. The morning program consisted of four round table discussions on the following subjects: obstetric analgesia and anesthesia; induction of labor, indications and methods; hysterectomy—total versus subtotal, and sterility, diagnosis and treatment. The speakers in the afternoon program included Carl Voegtlin, Ph.D., of the National Cancer Institute, who gave the address of welcome, and the following:

Dr. Harold L. Stewart, Bethesda, Md., Pathologic Anatomy of Mammary Tumors of Mice.
Harold B. Andervont, Sc.D., senior biologist, U. S. Public Health Service, Influence of Inbreeding and Foster Nursing on Spontaneous Mammary Tumors in Mice.
Harold P. Morris, Ph.D., Relation of Some Essential Amino Acids to the Growth of Mammary Tumors.
Dr. Michael B. Shimkin, Bethesda, Md., "Carcinogenicity" of Estrone and Stilbestrol.

The program included clinics at the Garfield Memorial Hospital, Gallinger Municipal Hospital and the health department clinic. The speakers at the dinner included Drs. Thomas B. Lee, Camden, N. J., president of the Obstetrical Society of Philadelphia, George M. Laws, Clifford B. Lull, Norris W. Vaux, Francis Sidney Dunne, Philadelphia; James H. Underwood, Woodbury, N. J., and Fred B. Nugent, Reading, Pa.

GEORGIA

Personal. — Dr. Jack R. McMichael, Quitman, has been appointed a member of the state board of health, succeeding Dr. Cyrus K. Sharp, Arlington.——Dr. George M. Anderson, Eastman, is reported to have resigned as health officer of Dodge County, effective December 31.

The L. C. Fischer Awards.—Drs. William Howard Hailey and Hugh E. Hailey, Atlanta, have received the annual Dr. L. C. Fischer Awards, presented through the Fulton County Medical Society, for their paper on "Familial Benign Chronic Pemphigus." The award of $100 was given for the paper showing the best research. For the best written paper, Dr. David Henry Poer won the award for his paper entitled "Clinical Experience with Use of Dihydrotachysterol (A. T. 10) in the Treatment of Ten Cases of Hypoparathyroidism—A Comparison with Parathyroid Hormone and Vitamin D_2."

ILLINOIS

Fellowships in Medicine and Dentistry.—The Graduate School of the University of Illinois has established four research fellowships to be awarded for one year in the fields of medicine and dentistry in Chicago at a stipend of $1,200 a year (calendar year with one month's vacation). Fellows are eligible for reappointment in competition with new applicants. Candidates for these fellowships must have completed a training of not less than eight years beyond high school graduation. The training may have been acquired in any one of the following ways or the equivalent thereof:

1. Work leading to the B.S. and M.D. degrees (in some instances the candidates would have the M.S. degree or an additional year or two of hospital training beyond the intern year).
2. Work leading to the B.S., M.S. and D.D.S. degrees.
3. Work leading to the B.S. or B.A. degree in a four year collegiate course and to the D.D.S. degree.
4. Work leading to the B.S., D.D.S., and M.D. degrees.

Candidates should indicate the field of research in which they are interested and submit complete transcripts of their scholastic credits, together with the names of three former science teachers as references. March 1 is the deadline for acceptance of applications. Announcement of the fellowship awards will be made on April 1, becoming effective on September 1. Formal application blanks may be secured from the secretary of the committee on graduate work in medicine and dentistry, 1853 West Polk Street, Chicago.

Chicago

Public Lecture by Dr. Musser.—A public lecture, sponsored by the Chicago Medical Society and the Chicago Heart Association, was delivered on February 7 by Dr. John H. Musser, professor of medicine, Tulane University of Louisiana School of Medicine, New Orleans, on "The Growing Importance of Coronary Disease."

Joint Meeting on Urology.—A joint meeting of the Chicago, Cleveland and Detroit Urological societies was held at the Palmer House January 25. Dr. Charles Morgan McKenna addressed the meeting on "Problems in the Diagnosis of Renal Tumors" and Drs. Harry W. Plaggemeyer, Detroit, and William E. Lower, Cleveland, gave the discussions. Dr. Vincent J. O'Conor spoke on "The Treatment of Renal Tumors" and Drs. Reed M. Nesbit, Ann Arbor, Mich., and James J. Joelson, Cleveland, were the discussants. A clinical meeting was held in the morning at the Billings Hospital.

Dr. Hamilton Anderson Goes to China.—Dr. Hamilton Anderson, of the staff of the Council on Medical Education and Hospitals of the American Medical Association, has resigned, effective February 15, to accept a professorship in pharmacology at Peiping Union Medical College, Peiping, China. Dr. Anderson graduated at the University of California Medical School in 1930 and joined the division of pharmacology the same year. He served as assistant clinical professor from 1934 until 1937, when he joined the staff of the American Medical Association. He engaged in field studies on amebiasis for the university at the Gorgas Memorial Laboratory, Panama, in 1931, and on leprosy at the Instituto Oswaldo Cruz, Rio de Janeiro, Brazil, in 1934. Dr. Anderson plans to sail from San Francisco for Peiping, March 22.

Society News.—Dr. Henry P. Wagener, Rochester, Minn., addressed the Chicago Ophthalmological Society January 15 on "Clinical Significance of Retinal and Choroidal Arterio-

sclerosis."——A symposium on the cement industry was presented before the Chicago Tuberculosis Society January 18 by Mr. A. J. R. Curtis, assistant general manager, Portland Cement Association; Drs. Clarence O. Sappington and Milton H. Kronenberg, all of Chicago.— -The Chicago Neurological Society was addressed January 18, among others, by Drs. Alexander R. MacLean, Rochester, Minn., on "Relationship of Orthostatic Hypotension to Myasthenia Gravis" and Norman Reider, Topeka, Kan., "Aphasia Due to Exsanguination."——Dr. George L. Streeter, Carnegie Institution of Washington, Baltimore, discussed "Episodes in the Doctrine of the Three Germ Layers" before the Chicago Gynecological Society January 19.——At a meeting of the Chicago Society of Industrial Medicine and Surgery January 23 the speakers were Drs. James K. Stack on "Structural Hand Injuries and Their Repair: Bone Injuries of the Wrist and Hand"; Michael L. Mason, "Repair of Tendon Injuries of the Hand," and Paul W. Greeley, "Plastic Repair of Cutaneous Injuries to the Hand."——Dr. Ernest E. Irons was chosen president of the Society of Medical History of Chicago, January 31; other officers are Drs. George H. Coleman, secretary-treasurer; Morris Fishbein, editor of the *Bulletin*, and the following councilors: Ludvig Hektoen, James B. Herrick, William A. Pusey, David J. Davis, James P. Simonds and Arthur F. Abt.

KENTUCKY

Physicians Honored.—Drs. Daniel M. Griffith and John C. Hoover, Owensboro, and John M. Clayton, West Louisville, were guests of honor at a dinner given by the Daviess County Medical Society in Owensboro in December, in tribute to their long years of service. All have practiced more than fifty years. Dr. Robert Haynes Barr, Owensboro, was master of ceremonies and the speakers were Drs. Granville S. Hanes, Louis Frank and Virgil E. Simpson, all of Louisville, and Leslie C. Dodson, William L. Tyler Sr. and Otway W. Rash, all of Owensboro.——M. H. Dailey, D.D.S., and Dr. John A. Gilkey, Paris, were honored at a banquet given by the Bourbon County Medical Society, Paris, January 18, in recognition of their many years of service to the community.

Society News.—Dr. Henry C. Sweany, Chicago, addressed the Jefferson County Medical Society, Louisville, recently on "Some Important Complications of Tuberculosis." Dr. Bayard T. Horton, Rochester, Minn., was the guest speaker December 18 on "Use of Histamine and Histaminase in Clinical Medicine."——Dr. Hans Brunner, Chicago, addressed the Louisville Eye and Ear Society January 11 on "Pathologic Changes in the Middle Ear After Radical Mastoid Operation."——Drs. Charles D. Cawood and Richard G. Elliott II, Lexington, addressed the Bourbon County Medical Society, Paris, in December on "Present Day Knowledge of Poliomyelitis" and "Diagnosis and Treatment of Poliomyelitis" respectively.——Dr. Samuel A. Overstreet, Louisville, addressed the Whitley County Medical Society, Corbin, January 8, on treatment of ulcer of the stomach.

MAINE

Society News.—Dr. Grantley W. Taylor, Boston, recently discussed "Management of Carcinoma of the Breast" before the Cumberland County Medical Association.——At a meeting of the Kennebec County Medical Association in Augusta, December 21, Dr. John H. Talbott, Boston, spoke on "Water and Salt Metabolism."

MARYLAND

Dr. Perrin Long Named to New Department.—Dr. Perrin H. Long, associate professor of medicine, Johns Hopkins University School of Medicine, Baltimore, has been appointed head of a new department of preventive medicine at the school. The department was established through a grant from the Rockefeller Foundation, allowing $350,000 during the next ten years, according to *Science*. A graduate of the University of Michigan Medical School, Ann Arbor, 1924, Dr. Long served as assistant and associate with the Rockefeller Institute for Medical Research, New York, from 1927 to 1929, when he went to Johns Hopkins.

MICHIGAN

The Beaumont Lectures.—Dr. Alfred Blalock, professor of surgery, Vanderbilt University School of Medicine, Nashville, Tenn., delivered the annual Beaumont lectures of the Wayne County Medical Society, Detroit, February 5-6. His subject was "Surgical Therapeusis: A Consideration of Shock and Other Problems."

Graham Davis Heads Hospital Program.—Graham L. Davis, who has been associated with the Duke Endowment in Charlotte, N. C., since 1924, has been appointed director of the rural hospital program of the W. K. Kellogg Foundation, Battle Creek, according to *Modern Hospital*. Mr. Davis, assistant to Dr. Watson S. Rankin, Charlotte, N. C., trustee of the Duke Endowment and director of its hospital and orphans' section, is a member of the council on administrative practice of the American Hospital Association and chairman of the committee on accounting and statistics.

Michigan Basic Science Act Constitutional.—According to the January 24 issue of the Detroit *Legal News*, the Circuit Court of Wayne County has upheld the constitutionality of the Michigan basic science act, passed in 1937, in the case of *George Timpona and Marie Hyland Timpona, his wife,* v. *Brown et al.* The court said that it cannot be denied that the purpose and effect of the basic science act are salutary and that it represents another step forward in the movement which has received frequent legislative endorsement in recent years to protect the public health by requiring those who undertake to cure human ailments to be well qualified in their various professions. The purpose of the act, the court said, is certainly in conformity with high public policy when it insists that practitioners be well grounded in those rudimentary scientific subjects which underlie the healing art. The court dismissed as being without validity a contention made by the plaintiffs that the basic science act was unconstitutional because of the fact that it exempted dentists from its requirements.

MINNESOTA

J. G. Halland Sentenced Again.—John G. Halland, who was formerly licensed to practice medicine in Minnesota, was sentenced at Slayton to a term of fifty days in the Cottonwood county jail recently. Judge J. K. Campbell found Halland "guilty of interfering with the rural schools of Murray County by frightening the teachers and inspecting school records without proper authority from the county superintendent or the commissioner of education." Halland graduated at the University of Minnesota Medical School in 1919 with the degree of bachelor of medicine. His license was revoked by the state board in 1931 because of habitual indulgence in the use of drugs. In 1925 he served one year in jail at Santa Fe, N. M., for a violation of the federal narcotic law, according to the state board. In 1928 he served fourteen months in the federal penitentiary at Leavenworth, Kan., for a similar offense committed at Denver. In 1932 he served seventy days in the Minneapolis Workhouse. In September 1933 he pleaded guilty in the district court at Fergus Falls to an information charging him with practicing medicine without a license. At that time he was given a suspended sentence of six months.

NEW YORK

Society News.—Dr. James Ewing, New York, addressed the Medical Society of the County of Westchester, White Plains, January 16, on "Advantages of Local Control of Cancer Service." The society cooperated with the cancer clinics of hospitals in the county and with the official and voluntary agencies interested in cancer in presenting an exhibit on cancer, January 13-17. Drs. Lewis Gregory Cole and his son, Dr. William Gregory Cole, received the first James Ewing Award, a scroll presented by the county society for a meritorious exhibit contributing to understanding and control of malignant diseases.——Drs. George Porter Robb and Israel Steinberg, New York, addressed the Nassau County Medical Society, Garden City, January 30, on "Visualization of the Chambers of the Heart and of the Thoracic Blood Vessels," discussing disease of the heart and of the lungs, respectively.

New York City

Fifth Harvey Lecture.—Homer W. Smith, Sc.D., professor of physiology, New York University College of Medicine, will deliver the fifth Harvey Lecture of the current series at the New York Academy of Medicine, February 15, on "Physiology of the Renal Circulation."

Alumni Program.—The Alumni Association of New York University College of Medicine will hold its annual Alumni Day program on February 22. The general subject will be "Modern Aspects of Preventive Medicine." In the morning, papers will be presented by Drs. Harry S. Mustard, Frank A. Calderone, Evan W. Thomas, Mortimer D. Speiser and Robert S. Hotchkiss. Speakers on the afternoon program will be Drs. Leonard J. Goldwater, Thomas Francis Jr., Elaine P. Ralli and Norman H. Jolliffe. At a noon luncheon there will be addresses by Drs. John L. Rice, health commissioner of

New York; Samuel A. Brown, dean emeritus of the medical school; Currier McEwen, dean, and the chancellor of the university, Harry Woodburn Chase, Ph.D. Dr. James W. Smith is president of the association.

New Medical College Building Dedicated.—The New York Medical College, Flower and Fifth Avenue Hospitals recently dedicated a new $1,500,000 building for the college. Harold Willis Dodds, Ph.D., president of Princeton University, Princeton, N. J., made the dedicatory address and other speakers were Mr. Charles D. Halsey, chairman of the board of trustees; Mayor La Guardia, and Dr. Lewis Hill Weed, Baltimore. The new building is nine stories high and is connected floor by floor with the Flower and Fifth Avenue Hospitals. On the first floor are the administrative offices and an auditorium that will seat about 400 persons. The library and other student facilities are on the second and arrangement of the other floors is as follows: third, chemistry and physiology laboratories, with the necessary offices and conference rooms; fourth, department of medicine; fifth, histology and embryology and bacteriology laboratories; sixth, clinical pathology; seventh, department of anatomy; eighth, pathology, and ninth, department of surgery. An attempt has been made to locate the laboratories in the college building in close proximity to the sources of their work in the hospital; for example, the

New home of New York Medical College.

pathology laboratory is on the same floor as the operating rooms. The building also includes a new outpatient department with an entrance on One Hundred and Fifth Street; the college building opens on One Hundred and Sixth Street.

NORTH CAROLINA

Changes in Health Officers.—Dr. Frank E. Wilson, Williamston, has been appointed health officer of Edgecombe County, succeeding Dr. Lorenzo L. Parks, who resigned to join the state health department of Florida, it is reported. Dr. John W. Williams, formerly of Monroe, La., has succeeded Dr. Wilson in Martin County.——Dr. Ralph J. Sykes, Weldon, recently health officer of Halifax County, has resigned to join the staff of the state health department.

OHIO

Society News.—Dr. Jacob R. Buchbinder, Chicago, addressed the Montgomery County Medical Society, Dayton, January 19, on "Recognition and Treatment of Acute Suppurative Pericarditis."——Dr. Norris J. Heckel, Chicago, addressed the Academy of Medicine of Toledo and Lucas County, January 12, on "Diagnosis and Treatment of Sterility in the Male."——Dr. James B. Herrick, Chicago, addressed the Cleveland Medical Library Association at its annual meeting, January 19, on "Jean-Baptiste Bouillaud and His Contributions to Heart Disease."

Physicians Honored.—Six members of the Fairfield County Medical Society who have practiced more than forty years were honored at a dinner given by the society in Lancaster, January 4. The guests were Drs. George P. Huddle, Stoutsville; Adelbert V. Lerch, Pleasantville; Charles M. Alt, Baltimore, and George O. Beery, Charles A. Barrow and George W. Beery, Lancaster. Dr. Frank H. Stukey, Lancaster, president of the society, presided. A plaque was presented to each honored guest.——Drs. William K. Ruble and Austin C. Roberts, Wilmington, were guests of honor at a dinner given by the Clinton County Medical Society in Wilmington, January 16, in recognition of their long careers in medicine. Dr. Ruble, who recently retired after seventeen years as health officer of Clinton County, entered practice in 1890 after graduating from Eclectic Medical College, Cincinnati, and Dr. Roberts began practice in 1890 after his graduation from Starling Medical College, Columbus. Dr. Leland H. Fullerton, New Vienna, president of the society, was toastmaster at the dinner.

OKLAHOMA

Society News.—Drs. W. J. Trainor and Fred E. Woodson, Tulsa, addressed the Garfield County Medical Society, January 25, on "Causes of Cardiac Failure" and "Selection of an Anesthetic for the Cardiac Patient" respectively.——Dr. John L. Emmett, Rochester, Minn., addressed the Pottawatomie County Medical Society, Shawnee, January 15, on "Excerpts from Medical History."

Course in Pediatrics.—A two year postgraduate program of lectures in pediatrics will begin on February 12 with a circuit of towns in northeastern Oklahoma. Drs. Hugh McCulloch and Wayne A. Rupe, St. Louis, will be the first lecturers. The Commonwealth Fund and the state health department are cooperating in financing the course, which has been arranged by the committee on postgraduate education of the state medical association.

OREGON

Postgraduate Course on Heart Disease.—The department of medicine of the University of Oregon Medical School, Portland, announces a postgraduate course on heart disease, February 26-28. Thirty-three lectures are listed in the program, which will be presented in morning and afternoon sessions and evenings of the first two days. The fee will be $15.

The Jones Lectures.—Dr. Herbert M. Evans, professor of anatomy and Morris Herzstein professor of biology, University of California Medical School, Berkeley, gave the annual N. W. Jones Lectures at the University of Oregon Medical School, Portland, January 18-19. His subjects were "New Light on the Biological Role of Vitamin E" and "Some Unsolved Problems in Anterior Pituitary Physiology."

Society News.—Dr. Harold K. Faber, San Francisco, addressed the Portland Academy of Medicine January 25-26 on "Active Immunization in Pertussis and Tetanus" and "Some Problems in Poliomyelitis." Dr. Faber was also the guest of the North Pacific Pediatric Society January 27, conducting a clinic at Doernbecher Hospital and leading a round table discussion on active immunization of tetanus and whooping cough. Dr. Edwin E. Osgood, Portland, also addressed the pediatric meeting on "Some Recent Observations on Chemotherapy Using Bone Marrow Culture" and Dr. Joseph B. Bilderback, Portland, was a special guest as president of the American Academy of Pediatrics.——Dr. Leo S. Lucas, Portland, addressed the Multnomah County Medical Society, Portland, January 3 on "Physiotherapy in Orthopedic Surgery."——Drs. Lionel D. Prince, San Francisco, and Leo L. Stanley, San Rafael, Calif., addressed the Central Willamette Medical Society, Eugene, recently on "Fractures of the Patella" and Medical Problems of the State Penitentiary" respectively.——Dr. Frank W. Lynch, San Francisco, gave three lectures before the Polk-Yamhill-Marion Counties Medical Society in Salem December 11 on "Cancer of the Uterus," "Prolapse of the Uterus" and "Uterine Bleeding."

PENNSYLVANIA

Epidemic Meningitis.—Twenty-five persons have been stricken with spinal meningitis in Wilkes-Barre since January 1 and thirteen have died, newspapers reported, January 30.

Philadelphia

Dinner in Honor of Dr. Pfahler.—The Philadelphia Roentgen Ray Society sponsored a dinner in honor of Dr. George E. Pfahler, professor of radiology, University of Pennsylvania Graduate School of Medicine, January 25, at the Warwick Hotel. Dr. Eugene P. Pendergrass was toastmaster and the speakers were Drs. Joseph E. Roberts Jr., Camden, N. J., president of the society; Francis F. Borzell, president-elect of the Medical Society of the State of Pennsylvania; George H. Meeker, LL.D., dean of the graduate school of medicine, and Dr. Joseph McFarland, emeritus professor of pathology, University of Pennsylvania School of Medicine. The program

was a large folder containing the signatures of several hundred physicians, including radiologists from many parts of the country, and a photograph of Dr. Pfahler.

Site for Convalescent Hospital.—Fulfilling the terms of a bequest made in 1923, a site has been purchased for the erection of the Magee Memorial Hospital for Convalescents. Mrs. Anna J. Magee, who died on Dec. 12, 1923, left $600,000 to found and endow an institution "whose object shall be the relief of the general hospitals of the city of Philadelphia from the burden of the support of patients who have passed through the active stages of acute illness." The terms of the will stipulated that the hospital should be controlled by a board of trustees representing eleven Philadelphia hospitals and the physician of the new convalescent hospital. The latter is to be the incumbent professor of medicine at Jefferson Medical College. Children under 14 years of age and persons suffering from incurable or contagious disease will not be admitted. The principal fund left by Mrs. Magee has been allowed to accumulate during the years since her death. The site of the new hospital, which will have between seventy-five and 100 beds, is an elevation overlooking Fairmount Park.

PHILIPPINE ISLANDS

Society News.—At the October meeting of the Manila Medical Society the speakers were Drs. Paterno S. Chikiamco and Clodualdo T. Orquiza on "Roentgen Diagnosis of Ascariasis in the Gastrointestinal Tract"; Geminiano de Ocampo, "The Role of Ophthalmology and Otolaryngology in Some Problems of Internal Medicine"; Gervasio Santos Cuyugan, Fortunato S. Guerrero and Pedro T. Nery, "Tuberculosis of the Cecum."——Dr. Fernando G. Medina, among others, addressed the Cavite Medical Society in October on "Frequency of Errors in the Differential Diagnosis Between Pneumonia and Bronchial Asthma and Gastrointestinal Diseases."——Dr. Eugenio Alonso, Cebu, addressed the Cebu Medical Society in October on "Blood Typing in Establishing Paternity."

PUERTO RICO

Sanitation Facilities in Rural Areas.—The Department of Health of Puerto Rico is building sanitary facilities in the rural areas of the island as a part of the anti-hookworm campaign with a fund of $450,000 allotted by WPA and $130,000 appropriated by the insular government. It is planned that 25,000 units will be built by June 30, when the work must be completed.

Study of Diarrhea and Enteritis.—The U. S. Public Health Service, in cooperation with the Puerto Rico Department of Health, is extending to the island a study of diarrhea and enteritis that has been carried on in certain areas of the United States. Dr. Albert V. Hardy will direct the study and Dr. James L. Watt of the public health service will assist in carrying out the project at the biologic laboratory in San Juan.

GENERAL

Base Hospital Reunion Planned.—All officers, enlisted men and nurses who were connected with the U. S. Army Base Hospital at Camp Sevier, S. C., during the war period 1917-1919 are asked to communicate with Mr. Mahlon R. Callaway, 566 West Third Street, Dayton, Ohio, concerning plans for a proposed reunion. Mr. Callaway, a former enlisted man, is the organizer of the U. S. Army Base Hospital Camp Sevier Reunion Association.

Society News.—Dr. John Cotten Taylor, Washington, N. C., was elected president of the Seaboard Medical Association of Virginia and North Carolina at its annual meeting at Virginia Beach, Va., December 12-14. Dr. Clarence Porter Jones, Newport News, Va., was reelected secretary. Among the speakers were Drs. Raymond A. Vonderlehr, U. S. Public Health Service, Washington, D. C., on the program for control of syphilis and Edwin P. Lehman, Charlottesville, Va., on diagnosis of cancer of the breast.

Examination by Board of Obstetrics.—The general oral and pathologic examinations (part II) of the American Board of Obstetrics and Gynecology for all candidates (groups A and B) will be conducted by the entire board at the Atlantic City Hospital, Atlantic City, N. J., from Friday June 7 through Monday June 10, prior to the meeting of the American Medical Association. Candidates are requested to notice that the dates of the examinations have been advanced one day from those previously announced. Application for admission to group A, part II examinations must be filed with the secretary not later than March 15. Candidates for reexamination in part II must make written application before April 15. The board's annual dinner will be held at the Hotel McAlpin, New York, June 12. For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh.

Campaign to Extend Birth Control.—At the annual meeting of the Birth Control Federation of America in New York, January 24, plans were made for a campaign to extend and develop the movement for birth control. Dr. Woodbridge E. Morris, New York, general director of the federation, is chairman of the newly formed National Committee for Planned Parenthood, which will conduct a campaign for $289,117 to finance the federation for the fiscal year 1940-1941. The committee is divided into groups representing education, religion, public health and medicine, social welfare, science, literature, business, law and philanthropy and women in civic affairs. The group representing public health and medicine are Dr. Carl V. Reynolds, Raleigh, health officer of North Carolina, said to be the first state to include birth control in its public health program; Charles-Edward A. Winslow, Dr.P.H., New Haven, Conn., and Miss Annie W. Goodrich, dean emeritus of the Yale University School of Nursing. Dr. Hans Zinsser, Boston, with Earnest A. Hooton, Ph.D., professor of anthropology at Harvard University, Boston, represent science.

Beware of Fraudulent Salesmen.—The California State Board of Medical Examiners recently reported the activities of one Logan Matthew Franey, who is said to be posing as a salesman for the medical book store of J. W. Stacey, Inc., San Francisco, after having been discharged by that firm. Franey was employed in October 1939 and sent to Seattle. The Stacey firm was informed by the librarian of the King County Medical Society, Seattle, that Franey had sold as his own certain books belonging to the company. It appeared that he had converted to his own use about $150 worth of books. Cash advances amounting to $125 had also been made to him and he had a gasoline credit card with which he had run up an account of $142.04. Gasoline receipts show that he had been in Washington, Montana, Idaho and Oregon during October and November. As Franey retained a list of prospects furnished by the Stacey firm, physicians are warned to watch for him.——The American Surgical Trade Association reports again that swindlers are calling on physicians and hospitals claiming to represent surgical dealers. These swindlers obtain surgical instruments under the pretense that they will be repaired or replated. The instruments are not returned. Recently a man made a practice of calling on hospitals, claiming to be employed by a manufacturer of compressors and pumps and offering to repair the apparatus belonging to the hospital at reasonably low prices. The association urges physicians and hospitals not to turn over surgical instruments to strangers without absolute proof of their identity and authority.

CANADA

Gross Memorial Lecture.—Dr. Maude E. S. Abbott, Montreal, gave the second annual Louis Gross Memorial Lecture at the Jewish General Hospital, Montreal, recently. Dr. Abbott's subject was "The History of Medicine in the Province of Quebec."

Society News.—Dr. James Herbert Mitchell, Chicago, addressed the Academy of Medicine of Toronto December 5 on "Differential Diagnosis and Treatment of Cutaneous Lesions of the Hands and Feet." Dr. Paul M. Wood, New York, was the guest speaker at a meeting of the section of anesthesia January 29 on "Preoperative and Operative Care of the Handicapped Patient Suffering from Anoxemia."

Cancer Clinic in Saskatchewan.—The Saskatchewan Cancer Commission, the provincial department of health and the Regina Grey Nuns Hospital have recently cooperated in the construction of a special building for diagnosis and treatment of cancer, said to be the first in Canada designed especially for this purpose. The building is a four story wing on the Grey Nuns Hospital erected at a cost of $150,000. Offices, examination and treatment rooms and a surgery are on the second floor; the third and fourth have twenty beds each. The Saskatchewan Cancer Commission was formed in 1930 by the department of health and shortly opened clinics in Regina and Saskatoon, with about 2.5 Gm. of radium. The volume of work grew until two full time physicians were appointed for the Regina Clinic in 1939 and it was moved from the Regina General Hospital to the Regina Grey Nuns Hospital. Other agencies interested have been the cancer committee of the Saskatchewan College of Physicians and Surgeons and the Saskatchewan Branch of the Canadian Society for the Control of Cancer.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 10, 1940.

Transportation by Air of Blood for Transfusion

In previous letters the arrangements for a blood transfusion service in the war on a scale never known before were described. As stated, transportation by air plays an important part and further details are now available. There is a fleet of aircraft to carry blood from the depots in which it is stored to the hospitals. A wire crate containing ten bottles of blood is the unit for dispatch. To each bottle is attached a tin box containing the sterilized equipment necessary for giving the blood. There are insulated boxes for the airplanes, each of which holds two crates and when loaded weighs about 100 pounds. The boxes are kept loaded in the refrigerator until just before dispatch. Thereupon a block of ice contained in a tin box is slipped into the lid of the box. This, in conjunction with the kapok insulating material with which the walls of the box are lined, ensures that the temperature inside the box will not rise more than 5 degrees C. in eight hours. Little structural change is required in the aircraft used for the work. The boxes are merely strapped to the fuselage to prevent rolling when in flight. The type of aircraft used can carry five boxes of blood; that is, 100 pints.

Treatment of War Fractures by the Closed Method

At the Royal Society of Medicine Dr. J. Trueta, late director of surgery at the General Hospital of Catalunya, Barcelona, described his method of treating war fractures, which gave good results in the Spanish civil war. Advance in the treatment of compound fractures had always been secured by the experience of war. He particularly discussed injuries from aerial bombs, which were more destructive than those from bullets. No measures against infection, such as antisepsis or serum, were used today without first excising damaged tissue. Contrary to the opinion held during the great war by surgeons, such as Leriche, he believed that the greatest danger of infection lay not in bone but in muscle, which was favorable soil for anaerobic infection. In extensive wounds of the limbs, Trueta observed clinically, perhaps for the first time on a large scale, that true shock is the result of absorption of disintegrating tissues. After air raids on Barcelona he operated radically on hundreds of persons with severe wounds of the limbs within half an hour and sometimes within twenty minutes. After treatment of the primary shock a meticulous operation was performed, all devitalized tissue being removed. When operation was undertaken immediately it was common to observe that secondary shock or generalized infections did not occur.

Movement increased the dissemination of infection in the body and rigorous immobilization prevented it. This could be obtained only by enclosing the limb in a rigid casing which prevented all movement and permitted good circulation. The only material which supplied this requisite was plaster of paris. Its only disadvantage was that it prevented examination of the wound, but this was seldom necessary. In the upper limb, if properly applied, the closed method was always satisfactory and gas gangrene and septicemia were very rare. In the lower limb the leg and the thigh must be separately considered. In fractures of the leg the circulation of the foot and the local circulation in the wounded part and the possibility of excising devitalized tissue must be carefully estimated. If, in spite of excision, there was still doubt about the vitality or the circulation, one should wait a day or two before putting on plaster, using open treatment with continuous traction. If amputation became necessary, it could then be performed without loss of time. In the thigh the indications were the same but the local circulation of the tissues surrounding the wound was more important than the general circulation of the leg, which was easier to assess. By this treatment many lives as well as limbs could be saved and gas gangrene disappeared from the hospital.

Reduction of fractures must be secured by traction on the operating table. The plaster of paris should then be applied under the anesthetic directly on the skin, without interposition of raw cotton or stockinet. Only the anterior-superior iliac spine, the os calcis and the achilles tendon required to be covered with cotton. The immediate benefits of the plaster treatment were absence of pain, rapid disappearance of shock and return of appetite. In 1,073 cases removal of the plaster for infection was necessary in only 0.75 per cent. The first plaster was retained for six weeks.

In calling for a discussion of the paper the president of the section of surgery, Mr. Cope, described it as momentous and bidding fair to revolutionize a most difficult war problem. There was general agreement as to the value of the paper, but one speaker called attention to what might seem a small disadvantage—the disagreeable smell due to saturation of the plaster with the discharges. Dr. Trueta replied that in a certain number of cases yeast obtained from breweries was applied and mitigated the smell.

The Surgical Treatment of Coronary Disease

At the Edinburgh Medico-Chirurgical Society Mr. Laurence O'Shaugnessy read a paper on the surgical treatment of coronary disease. In the cardiovascular clinic at the Lambeth Hospital of the London County Council he has performed twenty operations for cardiac revascularization. Fifteen of the patients suffered from angina pectoris. Of these five died: one on the table, another from uremia three months after the operation and three from heart failure two months after operation. All the survivors made such progress that those who were bedridden became active again and those unable to work resumed their employment. There were five patients with symptoms of cardiac ischemia other than angina and in this group no death was caused by the operation. O'Shaugnessy's operation consists of supplying a fresh source of blood for the defective cardiac circulation by transplanting a segment of omentum into the chest and grafting it to the heart (cardio-omentopexy). He first demonstrated that this was possible by experiments on greyhounds. He tied the left coronary artery, which impaired their racing powers. He later performed cardio-omentopexy on the ischemic heart and found that this restored their racing powers. He demonstrated vascular anastomosis between the omental graft and the coronary tree.

O'Shaugnessy showed that his operation imitates what may occur in disease. After coronary thrombosis in a small proportion of cases adhesions form between the infarct and the parietal pericardium. The beneficial association of pericarditis with coronary disease is illustrated by Sternberg's classic case of "pericarditis episternocardia" and Clifford Allbutt's patient, a physician who returned to active practice after a severe attack of angina complicated by pericarditis. O'Shaugnessy observed the following similar case: A man now 67 suffered from severe angina. Three years ago he had a more violent attack than any previous one and was removed to the hospital in a state of collapse. For some days his state was critical but he recovered and after some weeks in bed returned home. He gradually resumed general activity and was amazed to find that his angina had disappeared. Moritz in 1932 demonstrated by injection studies the vascularity of pericardial adhesions. In the pathologic department of the Lambeth Hospital vascular continuity between the coronary tree and the vessels of the pericardium was found in a case of pericarditis following coronary thrombosis. Another example of disease pro-

ducing a collateral circulation is furnished by what sometimes happens in cases of uterine fibroids. When a pedunculated subserous fibroid suffers partial necrosis because the blood supply through a narrow pedicle is inadequate, the omentum adheres to the affected area and not only arrests the process but provides a local circulation adequate for the growth of the tumor, which may reach an enormous size. In cardio-omentopexy another benefit is possible: the graft (which is always attached in the region of the apex) may serve as a bridge between the right and left coronary vessels.

Good results from cardio-omentopexy are not to be expected when there is gross coronary disease with occlusion at several points. Hence O'Shaugnessy considers that a case in which two or more attacks of thrombosis have occurred is probably unsuitable for operation. In cases of calcification of the coronary arteries the results have been bad. Typical indications for the operation are presented by the patient who has made an incomplete recovery from a single attack of thrombosis, progressive angina of effort, hypertensive heart failure which has reacted badly to medical treatment, and syphilitic aortitis with aortic incompetence and anginal symptoms. The contra-indications to operation are age, gross structural defects in the heart and vascular degeneration in the renal or cerebral vessels.

A British Standard for Hemoglobinometers

The British Standards Institution has circulated for comment a draft British standard specification for hemoglobinometers, based on the carboxyhemoglobin method of Haldane. As a result the institution has received requests that an acid hematin method, for example Sahli's, not involving the use of coal gas or carbon monoxide, should be standardized. Before deciding to proceed with this additional standardization the institution has circulated a memorandum to medical organizations and individual practitioners interested in the subject, asking for further information.

PARIS

(From Our Regular Correspondent)

Dec. 30, 1939.

Harvey Cushing

In the meeting of the Academy of Medicine Dec. 19, 1939, Professor Guillain pronounced a eulogy on Harvey Cushing, a member of the academy since 1929, paying tribute to the extraordinary personality of Cushing, possessing as it did the moral and intellectual qualities of a physician at his best. He recalled the fine medical heredity of the great clinican of Boston, his professional, scientific and fraternal relations with William Osler, his travels in Europe, where he made many distinguished friends, his eminent services in the World War, his contributions and his ability as a teacher. He was, according to Guillain, an unerring clinician, a philosopher, educator and inspirer. All who knew him felt his courtesy, his sympathy and his deep humility.

Prevention of Thrombopenia Due to Gold Salt Therapy

In *Le Sang*, organ of the French society of hematology, Prof. Knud Secher, of Copenhagen, discusses grave accidents due to gold therapy or sodium thiosulfate. Thrombopenias occur almost altogether in patients affected with rheumatism. Secher thinks these accidents are not due to metal intoxication but to a reaction provoked by toxins liberated in the course of the treatment. Febrile reaction which he traces solely to liberated toxins may be prevented by the administration of vitamins. The vitamin deficiencies affect the same organs which are affected by gold intoxication. Accordingly, by combating vitamin deficiency protection can be given against these accidents. A mixture of vitamin A (20,000 international units), B_1 (from 750 to 1,500 international units), B_2 (from 375 to 750 Krieger-Lassen units) and C (2,500 international units) enables Secher to prescribe the gold salt therapy with high dosage for a large number of polyarthritic persons. He never observed a case of thrombopenia. A few exanthems that occurred during treatment were rapidly aborted by the administration of vitamin C, a substance that is markedly deficient in rheumatic and tuberculous patients.

Megakaryocytes and Sternberg's Cells

The frequent use of sternal puncture in the diagnosis of blood diseases led Gustavo Pittaluga at St. Anthony's Center of Blood Research to investigate the differences between Sternberg's ganglionic cells and the megakaryocytes that exist normally in the myeloid tissue. Medlar recently raised the question of the connection of Sternberg's cells with Hodgkin's disease. He found Sternberg cells in patients with Hodgkin's disease and thinks their origin is a systematic process of megakaryocytic metaplasia of the reticulo-endothelial system. Pittaluga does not share his view. He found essential differences in a study of 100 megakaryocytes and 100 Sternberg cells in the same person. The first have an average diameter of 46 microns and attain a maximal diameter of 90; the second measure from 32 to 70 microns. The relations of the nuclear mass to the cytoplasm, the chromatophilia of the cytoplasm, the structure of the mitochondria, the structure and chromatophilia of the nuclear chromatins are not the same. The nucleolar mass and the number of azurophil granulations indicate further contrasts. Besides, Sternberg's cells are not characterized by lymphogranulomatosis. Pittaluga concludes that no etiologic connection exists between the two diseases.

BUENOS AIRES

(From Our Regular Correspondent)

Dec. 30, 1939.

Isolation of Hypertensive Substance in the Blood

The kidney of animals with permanent arterial hypertension which was induced by constricting the renal artery pours into the blood a hypertensive substance (Houssay, Fasciolo and Taquini). If such a kidney is grafted in the neck of a normal dog by uniting the renal artery and vein of the kidney to the carotid and jugular vein respectively of the normal dog, the blood pressure increases in from five to fifteen minutes. If a normal kidney is grafted in the neck of a normal dog the blood pressure of the animal does not increase (Houssay and Fasciolo 1937). The citrated plasma of the venous blood of the ischemic kidney produces a strong vasoconstriction in the Laewen Trendelenburg toad preparation. Vasoconstriction is not caused when plasma of the venous blood of the normal kidney is used (Houssay and Taquini, 1938). To obtain greater concentration of vasoconstrictive substance in the blood, Braun Menéndez and Fasciolo used venous blood from a kidney which was supplied with blood from a cardiopulmonary preparation. In an hour of functioning, the defibrinated blood loses almost all its vasoconstrictive action. If by this time the supply of arterial blood is reduced by 80 or 90 per cent and after the reduction the venous blood from the kidney is collected, it can be shown that the hypertensive and vasoconstrictive action appears immediately in the blood. An injection of a small amount of blood is given to a chloralosed dog with the aim of desensitizing the animal against shocking substances. After an hour it is found that the blood from the ischemic kidney has a hypertensive action, if it is compared with that of the kidney which has an abundant blood supply from the circuit of irrigation (control blood). The authors, in collaboration with Leloir and Muñoz, found that the hypertensive substance of the blood serum dissolves itself when the serum is treated with three volumes of acetone. The evaporated residue elevates the arterial blood pressure of chloralosed dogs. The hypertensive substance is soluble in glacial acetic acid and resists boiling as well as acid hydrolysis. It dissolves neither in ether nor in amyl alcohol. The hypertensive

substance is differentiable from renin, which does not stand boiling and does not dissolve in 75 per cent acetone. It is also differentiable from epinephrine. Braun Menéndez and his collaborators found that when renin is incubated in blood serum from a normal dog, horse or ox for fifteen minutes a vasoconstrictive substance appears in the serum which is identical with that of the blood of the kidney with acute ischemia. The substance dissolves if three volumes of acetone are added to the blood serum. The substance resists boiling and acid hydrolysis. If renin and the blood serum are separately incubated and then mixed just prior to the aggregation of acetone to the mixture, the extract from the mixture is inactive. The hypertensive substance is called hypertensine. Work carried on by the Instituto de Fisiología of the Faculty of Medicine of Buenos Aires resulted in obtaining hypertensive substances, originating in the ischemic kidney, from the blood of dogs.

Cardiac Changes in Avitaminosis

Dr. Soldati reported to the Sociedad Argentina de Biología of Buenos Aires observations on disturbances of the heart in experimental avitaminosis B_1 in rats and dogs. Bradycardia which is not modified by administration of atropine or pitressin was found in avitaminosis B_1 in rats. In dogs there are tachycardia, hypotension and dilatation of the right side of the heart. The electrocardiogram shows an exaggerated P wave, unevenness of the QR waves and sometimes inversion of the T wave. There are interfascicular edema, perinuclear vacuolization and marked vacuolization of the system of conduction in all cases. The electrocardiogram of a dog indicated recent infarct. The animal was killed. There were two anemic infarcts, some small recent infarcts and remains of old infarcts. Obstructed vessels were not found in the zone of the anemic infarct, which probably was caused by functional disturbances of the myocardial supply, namely spasm, or compression by edema, in dogs with hypotension and with muscular fibers altered by the disturbance of nutritional insufficiency. Dogs with avitaminosis B_1 react to intravenous administration of epinephrine with exaggerated hypertension and normally to acetylcholine hypotension. Pitressin produces bradycardia less acute in dogs with avitaminosis B_1 than in normal dogs. Stopping of the heart is obtained by stimulating the vagus nerve with the same acuteness as in control dogs.

Changes in Bones in Endemic Fluorosis

The presence of mottled enamel on the teeth of persons living in different regions of Argentina in which the amount of fluoride in drinking waters is abundant has been studied for years. Recently it was found that nine patients observed in Buenos Aires who came from the Pampas and other regions of the province of Buenos Aires had acute mottled enamel and skeletal alterations which varied from increased thickness of the lumbar and pelvic bones to generalized typical osteopetrosis. Drs. Capizzano, Paterson of Toledo, Megy and Valotta reported the condition in the *Revista de medicina y ciencias afines* (**1**, No. 4, 1939) and Mascheroni, Muñoz and Reussi reported an acute case to the Sociedad Argentina de Biología. The patient died from uremia. Fluoride (0.97 per cent) was found in the ashes of the bones.

Epidemic of Psittacosis

Outbreaks of psittacosis from parrots imported from Australia are frequently reported in Argentina. The first epidemic, well studied and in which a diagnosis was made, was reported by Barros in 1929. More than ten epidemics have been studied in the last ten years. The diagnosis has been made through the Instituto Bacteriológico del Departamento Nacional de Higiene, directed by Prof. Alfredo Sordelli. Recently an outbreak took place, with twenty-five patients and nine deaths. Three physicians were victims of the epidemic; one recovered and two died.

Personals

Dr. J. J. Spangenberg was appointed president of the Departamento Nacional de Higiene to fill the vacancy left by Dr. Miguel Sussini, who retired.

The following appointments were recently made: Prof. A. J. Costa for the chair of surgical technic of the Faculty of Medicine of Buenos Aires, left vacant by the death of Prof. Guillermo Bosch Arana, and Prof. E. Castaño for the chair of urologic clinic vacated by Dr. Bernardino Maraini, who retired at the age limit.

The following physicians left recently for the United States: Dr. Hugo Chiodi with a scholarship of the Rockefeller Foundation to carry on studies in the Fatigue Laboratory of Harvard. Dr. Flaminio Vidal with a scholarship of the Rockefeller Foundation to work on the subject of neurology under Dr. S. W. Ranson in Chicago. Dr. Eduardo de Robertis with a scholarship of the Fundación Devoto of the Academia Nacional de Medicina of Buenos Aires to study histology at Chicago University. Drs. Joaquín Llacer and J. Sozzi with the scholarship of the Asociación Argentina para el Progreso de las Ciencias to study microchemistry in the New York University. Dr. Armando Parodi with a scholarship of the Rockefeller Foundation to study viruses at the Rockefeller Institute of New York. Dr. C. Galli Mainini is to study nutritional diseases with Dr. E. P. Joslin, of Boston.

Visitors

The following professors visited recently the medical centers of Argentina and gave lectures: Profs. Roventine of New York (anesthesia), Gray Turner of London (surgery), G. Marañón of Madrid, G. G. Voronoff of Paris and George Harrop of Baltimore.

The following professors came to Argentina in exile: Professors Herlitzka of Turin, Foá of Milan, Lattes of Pavia and Morpurgo of Turin. They have neither official nor teaching positions.

Deaths

Dr. Enrique Bazterrica, an academic member, honorary professor and ex-dean of the Facultad de Ciencias Médicas of Buenos Aires and founder of modern gynecologic surgery of Argentina, aged 78, is dead.

Dr. Francisco Llobet, ex-assistant professor of anatomy and surgical medicine of the Facultad de Ciencias Médicas of Buenos Aires, aged 66, died of myocardial infarction. His collection of paintings is one of the richest in South America.

Dr. Bernardino Maraini, head of the department of urology of the Rawson Hospital and retired professor of the chair of clinical urology of the Faculty of Medicine of Buenos Aires died of myocardial infarction.

Dr. J. Salleras Pagés, assistant professor of clinical urology and head of the department of urology of the T. de Alvear Hospital, aged 52, is dead.

Marriages

Ellsworth H. Tanneyhill, Chicago, to Miss Eleanor Meyer, of Mount Olive, Ill., in November 1939.

James Elliot Walker, Hopkinsville, Ky., to Miss Pertice Tucker, of Camp Hill, Ala., Dec. 26, 1939.

Jesse Blease Floyd, Great Falls, S. C., to Miss Margaret Lewis Yongue, of Pickens, Dec. 24, 1939.

Woodrow B. Estes, Williamsburg, Ky., to Miss Lucy Manley, of Akron, Ohio, Dec. 27, 1939.

Pearl A. Toivonen, Ontonagon, Mich., to Erkki Leppo, of Finland, at Detroit, Oct. 13, 1939.

Edward Alex Heise, Columbia, S. C., to Miss Imogene Hort Posey in December 1939.

Charles P. Roper to Miss Cira Elizabeth Inman, both of York, S. C., Nov. 7, 1939.

Deaths

George Emerson Brewer, New York; University of Buffalo School of Medicine, 1884; Harvard Medical School, Boston, 1885; member of the Medical Society of the State of New York and the American Association of Genito-Urinary Surgeons; member and first president of the American Surgical Association and the Society of Clinical Surgeons; fellow of the American College of Surgeons; assistant demonstrator of anatomy from 1892 to 1900, instructor of surgery from 1900 to 1903, clinical lecturer, 1903-1904, professor of clinical surgery from 1904 to 1913, professor of surgery from 1913 to 1917 and since 1917 emeritus professor at the Columbia University College of Physicians and Surgeons; during the World War was director of a base hospital in France and was later consulting surgeon to the Forty-Second Division of the American Expeditionary Force; consulting surgeon to the Presbyterian, Roosevelt, Woman's, City and St. Vincent's hospitals and the Manhattan Eye and Ear Infirmary; was consultant to the Perth Amboy (N. J.) Hospital and the Muhlenberg Hospital, Plainfield; author of a "Textbook on Surgery for Practitioners and Students" published in three editions, and "Method of Surgical Diagnosis"; aged 78; died, Dec. 24, 1939, in the Harkness Pavilion of Columbia-Presbyterian Medical Center.

Henry Barton Jacobs ● Baltimore; Harvard Medical School, Boston, 1887; associate in medicine at Johns Hopkins University School of Medicine, 1896-1904; original secretary from 1904 to 1920 and member of the original board of directors of the National Association for the Study and Prevention of Tuberculosis, now the National Tuberculosis Association; past president of the Maryland Tuberculosis Association and the Laennec Society for the Study of Tuberculosis; was a trustee of the Peabody Institute, Johns Hopkins Hospital, the Harriet Lane Home for Invalid Children, the Maryland Institute, the Children's Hospital School and the Church Home and Infirmary; past president of the Hospital for Consumptives, Towson; was a member of the original board of managers of the Maryland State Tuberculosis Sanatorium; associate editor of the *Annals of Medical History;* aged 81; died, Dec. 18, 1939, of coronary occlusion.

Howard Edwin Ruggles ● San Francisco; Harvard Medical School, Boston, 1913; associate clinical professor of roentgenology from 1918 to 1927 and clinical professor since 1927, University of California Medical School; roentgenologist to St. Luke's Hospital and University of California Hospital; consulting roentgenologist to the Southern Pacific Hospital, Children's Hospital, Shriner's Hospital and San Francisco Hospital; member of the American Roentgen Ray Society; served during the World War; author, with Dr. George W. Holmes, of "Roentgen Interpretation," published in 1918, and "Urological Roentgenology," with Dr. Miley B. Wesson, published in 1936; aged 53; died, Dec. 29, 1939, of coronary sclerosis.

George Waller Hawley, Westport, Conn.; Cornell University Medical College, New York, 1899; member of the Connecticut State Medical Society and the New England Surgical Society; fellow of the American College of Surgeons; served during the World War; associate professor of surgery at the New York Post-Graduate Medical School, New York, from 1921 to 1928; attending surgeon to the Bridgeport Hospital from 1909 to 1934 and St. Vincent's Hospital, Bridgeport, from 1910 to 1917; assistant surgeon, Hospital for Ruptured and Crippled, New York, from 1908 to 1921; aged 65; died, January 1.

Robert Parke Bay ● Baltimore; University of Maryland School of Medicine, Baltimore, 1905; professor of oral surgery at his alma mater; fellow of the American College of Surgeons; past president of the Baltimore City Medical Society; chief surgeon to the Maryland General Hospital ; attending surgeon to the Church Home and Infirmary; consulting surgeon to the South Baltimore General Hospital, Union Hospital of Cecil County, Elkton, and the Harford Memorial Hospital, Havre de Grace; chief medical examiner of the State Industrial Accident Commission; aged 55; died, January 1, of cerebral hemorrhage.

Edwin Lucien Perkins, Sioux Falls, S. D.; Northwestern University Medical School, Chicago, 1904; member of the South Dakota State Medical Association and the American Urological Association; fellow of the American College of Surgeons; past president of the Sioux Valley Medical Association; served during the World War; lecturer in obstetrics at the University of South Dakota School of Medical Sciences, Vermilion; formerly physician to the state penitentiary; aged 69; on the staff of the McKennan Hospital, where he died, Dec. 10, 1939, of cerebral hemorrhage.

John Henry Mullin, Wilmington, Del.; Johns Hopkins University School of Medicine, Baltimore, 1916; member and secretary of the Medical Society of Delaware; fellow of the American College of Surgeons; past president of the New Castle County Medical Society; served during the World War; served on the staff of the Delaware Hospital in various capacities, on the courtesy staff of the Homeopathic, Wilmington General and St. Francis hospitals; aged 50; died, Dec. 20, 1939.

Charles Falkowsky Jr. ● Scranton, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1901; member of the House of Delegates of the American Medical Association, 1936, 1938 and 1939; past president of the Medical Society of the State of Pennsylvania; fellow of the American College of Physicians; on the staffs of the Nanticoke (Pa.) State Hospital, Scranton State Hospital and the Mercy Hospital; aged 59; died, Dec. 28, 1939, of chronic myocarditis.

Dolph D. McHenry ● Oklahoma City, Okla.; University Medical College of Kansas City, Mo., 1897; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; on the staffs of the Wesley Hospital, Oklahoma City Hospital and St. Anthony's Hospital; aged 66; died, Dec. 28, 1939, at St. Anthony's Hospital, St. Petersburg, Fla., of coronary thrombosis.

Harry Clifton Burgess, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1905; associate professor of obstetrics and gynecology at his alma mater; member of the American Gynecological Society; fellow of the American College of Surgeons; served during the World War; on the staffs of the Royal Victoria Hospital and Montreal Maternity Hospital; aged 56; died, January 1.

William Colegrove Tuckerman, Cleveland; University of Wooster Medical Department, Cleveland, 1905; member of the Ohio State Medical Association and the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; aged 61; on the staff of the Glenville Hospital, where he died, Dec. 5, 1939, as the result of injuries received in an automobile accident July 30.

Theron Sparhawk Langford, Ann Arbor, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1902; member of the Michigan State Medical Society; past president and secretary of the Washtenaw County Medical Society; served during the World War; formerly member of the city board of health; aged 67; died, Dec. 20, 1939, in the University Hospital of coronary thrombosis.

Harry Locke Paddon, North West River, Labrador; L.R.C.P., London, and M.R.C.S., England, 1911; a medical missionary for many years associated with the work of Sir Wilfred Grenfell in Labrador; head of the hospital school and industrial work of the Grenfell Foundation at North West River, and Indian Harbor, Newfoundland; aged 58; died, Dec. 24, 1939, in the Bryn Mawr (Pa.) Hospital.

Joseph Numa Roussel ● New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1896; formerly professor of dermatology at the Louisiana State University Medical Center; for many years dermatologist in charge of the Touro Infirmary, and senior visiting physician, division of dermatology, Charity Hospital; aged 68; died, Dec. 15, 1939, of angina pectoris.

Oren Mechling Kramer, Millersport, Ohio; Starling Medical College, Columbus, 1897; member of the Ohio State Medical Association; past president of the Fairfield County Medical Society; formerly physician to the state penitentiary; aged 66; died, Dec. 18, 1939, in the White Cross Hospital, Columbus, of coronary thrombosis.

Lee Humphrey, Malta, Ohio; Medical College of Ohio, Cincinnati, 1888; member of the Ohio State Medical Association; member and past president of the state medical board; and for many years member of the county school board and of the school board of Malta; bank president; aged 75; died, Dec. 30, 1939, of angina pectoris.

James H. Oakley ● Surgeon, U. S. Public Health Service, Evansville, Ind.; Northwestern University Medical School, Chicago, 1891; entered the U. S. Public Health Service as an assistant surgeon March 21, 1893, and retired Nov. 1, 1929; aged 70; died, Dec. 21, 1939, of hypertension and cerebral hemorrhage.

Heber E. Butts ● Surg., Lieut. Commander, U. S. Navy, retired, San Diego, Calif.; George Washington University School of Medicine, Washington, D. C., 1904; entered the navy in 1906 and retired July 1, 1937, for incapacity resulting from an incident of service; aged 62; died, Nov. 9, 1939.

Siegel Charles Frankel ● Louisville, Ky.; University of Louisville Medical Department, 1906; associate clinical professor of medicine at his alma mater; on the staffs of the Louisville City Hospital, Jewish Hospital and the Kosair Hospital; aged 59; died, Dec. 27, 1939, of arteriosclerosis.

Simon Peter Schroeder, Nashville, Ill.; Hospital College of Medicine, Louisville, Ky., 1887; member of the Illinois State Medical Society; formerly secretary of the Washington County Medical Society; at one time county coroner; aged 78; died, Dec. 24, 1939, of coronary thrombosis.

George Marquet Phillips, Eau Gallie, Fla.; College of Physicians and Surgeons, Baltimore, 1887; at one time professor of genito-urinary surgery at the Barnes Medical College, St. Louis; aged 77; died, Dec. 25, 1939, in the Riverside Hospital, Jacksonville, of cerebral hemorrhage.

Henry Wise Lyon, Windsor, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1918; formerly county health officer, member of the county board of health and member of the school board; aged 49; died, Dec. 16, 1939, of chronic myocarditis and hypertension.

Victor Arthur Robertson ● Brooklyn; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1883; fellow of the American College of Surgeons, consulting surgeon to the Coney Island and Harbor hospitals; aged 78; died, Dec. 21, 1939.

Leon Algernon Tancil ● Chicago; Howard University College of Medicine, Washington, D. C., 1921; on the staffs of the Central Free Dispensary and the Provident Hospital; aged 49; died, Dec. 7, 1939, in the Presbyterian Hospital of amyotrophic lateral sclerosis.

Louis John Frederick Staack, Brooklyn; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895; aged 65; died, Dec. 25, 1939, in the New York Polyclinic Medical School and Hospital, New York, of coronary occlusion.

Roy Sumner Stearns, Portland, Ore.; Harvard Medical School, Boston, 1905; member of the Oregon State Medical Society; fellow of the American College of Surgeons; on the staff of the Portland Sanitarium; aged 62; died, Dec. 12, 1939, of coronary occlusion.

William Henry Steele, Montpelier, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; for many years member of the board of education; served during the World War; aged 66; died, Dec. 22, 1939, of coronary sclerosis.

Luther Throngberry Young, Florence, Ala.; Emory University School of Medicine, Atlanta, 1917; member of the Medical Association of the State of Alabama; served during the World War; aged 50; died, Dec. 26, 1939, of a self-inflicted bullet wound.

James Jett McCormick, Norfolk, Va.; University of Virginia Department of Medicine, Charlottesville, 1892; formerly city health officer; city bacteriologist and secretary of the board of health; aged 71; died, Dec. 21, 1939, of bronchiectasis.

George Lewis Johnson, Morristown, N. J.; Baltimore Medical College, 1901; member of the Medical Society of New Jersey; served during the World War; for many years police surgeon; aged 67; died, Dec. 12, 1939, of cerebral arteriosclerosis.

Nathaniel Robinson, Brooklyn; New York Homeopathic Medical College, 1885; fellow of the American College of Surgeons; attending surgeon to the Carson C. Peck Memorial Hospital; aged 78; died, Dec. 13, 1939, of cerebral hemorrhage.

Leonard Schreifels, Granite City, Ill.; St. Louis College of Physicians and Surgeons, 1899; member of the Illinois State Medical Society; past president of the Madison County Medical Society; aged 73; died, Dec. 27, 1939, of heart disease.

Warren G. Young, Port Arthur, Texas; University of Louisville (Ky.) Medical Department, 1891; member of the State Medical Association of Texas; aged 70; died, Dec. 12, 1939, in St. Mary's Hospital of coronary disease.

James T. Biggerstaff, Wabash, Ind. (licensed in Indiana in 1903); member of the Indiana State Medical Association; past president of the Wabash County Medical Society; aged 85; died in December 1939 of chronic myocarditis.

Frank A. Townsend, Orange, Mass.; University of the South Medical Department, Sewanee, Tenn., 1898; aged 70; died, Nov. 9, 1939, in the Franklin County Hospital, Greenfield, of cerebral hemorrhage and arteriosclerosis.

John E. Handy, Caro, Mich.; Detroit College of Medicine, 1887; member of the Michigan State Medical Society; formerly member of the state board of registration in medicine; aged 80; died, Dec. 1939, of chronic myocarditis.

Joseph Harrison Shelton ● Kingsville, Texas; University of Virginia Department of Medicine, Charlottesville, 1905; fellow of the American College of Surgeons; aged 56; died, Dec. 23, 1939, of coronary thrombosis.

Detlef Marius Ferdinand Krogh, Philadelphia; Jefferson Medical College of Philadelphia, 1896; member of the Medical Society of the State of Pennsylvania; aged 72; died, Dec. 3, 1939, of arteriosclerotic heart disease.

James Perry Vickrey, Steele, Mo.; St. Louis College of Physicians and Surgeons, 1917; member of the Missouri State Medical Association; aged 55; was found dead, Dec. 17, 1939, of stab wounds inflicted by robbers.

Lewis Lowe Neblett, Clarksville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1901; member of the Tennessee State Medical Association; aged 73; died, Dec. 25, 1939, of coronary occlusion.

Emil Philip Wilhelm Richter ● Saginaw, Mich.; Saginaw Valley Medical College, 1900; served during the World War; formerly county coroner; aged 64; died, Dec. 21, 1939, in the Saginaw General Hospital.

Arthur Asbra Shaw, Clinton, Maine; Medical School of Maine, Portland, 1891; member of the Maine Medical Association; aged 75; died, Dec. 15, 1939, in Concord, N. H., of carcinoma of the prostate.

James Cowan Storie, Ashburnham, Mass.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1884; aged 84; died, Nov. 1, 1939, of chronic myocarditis.

Charles Franklin Martin, Boonville, Ind.; Louisville (Ky.) and Hospital Medical College, 1908; member of the Indiana State Medical Association; aged 53; died, Dec. 18, 1939, of coronary occlusion.

Charles Bond Warner, Port Henry, N. Y.; Bellevue Hospital Medical College, New York, 1880; past president of the board of education; aged 85; died, Nov. 25, 1939, of influenza and myocarditis.

William Boyles Staples, Bladon Springs, Ala.; University of Nashville (Tenn.) Medical Department, 1896; aged 69; died, Dec. 13, 1939, in Mobile, of chronic nephritis and cerebral hemorrhage.

Edward Carson Abbott, Omaha; State University of Iowa College of Homeopathic Medicine, Iowa City, 1899; aged 63; died, Dec. 16, 1939, in the Lutheran Hospital of chronic myocarditis.

Eugene John Rooney, Chicago; University of Illinois College of Medicine, Chicago, 1927; served during the World War; aged 44; died, Dec. 29, 1939, of massive hemorrhage and duodenal ulcer.

George Swan Iddings, Euclid, Ohio; Cleveland Medical College, 1897; University of Wooster Medical Department, Cleveland, 1899; aged 88; died, Dec. 10, 1939, of arteriosclerosis.

Harry Thorne, Dayton, Ohio; Medical College of Ohio, Cincinnati, 1895; formerly member of the board of education; aged 66; died, Dec. 18, 1939, of chronic myocarditis.

Victor Clyde Laughlin, Lancaster, Calif.; Western Reserve University Medical Department, Cleveland, 1898; aged 66; died, Nov. 26, 1939, of coronary thrombosis.

Fred C. Cade, Chicago; Chicago Medical School, 1919; on the staff of the Provident Hospital; aged 53; died suddenly, Dec. 11, 1939, of coronary thrombosis.

Cora L. Emery Reed, Rock Island, Ill.; Hahnemann Medical College and Hospital, Chicago, 1884; aged 81; died, Dec. 3, 1939, of chronic myocarditis.

Harry Wilfrid Gaddess ● Baltimore; Baltimore University School of Medicine, 1900; aged 60; died, Dec. 2, 1939, of cerebral hemorrhage.

Roswell Dwight Cruikshank, Goose Creek, Texas; Rush Medical College, Chicago, 1905; aged 63; died, Dec. 20, 1939, of cerebral hemorrhage.

Yves Lefebvre, Montreal, Que., Canada; University of Montreal Faculty of Medicine, Montreal, 1924; aged 41; died, Dec. 20, 1939.

Bureau of Investigation

NORMAN BAKER

Norman Baker, cancer quack of Muscatine, Iowa, and Eureka Springs, Ark., was found guilty on January 23, of using the United States mails to defraud. A few days later he was fined $4,000 and sentenced to four years in the penitentiary. This 56 year old, white haired, nonmedical founder of the Baker Hospital has been the subject of numerous reports, both in these columns and in the editorial pages of THE JOURNAL and in *Hygeia*, the health magazine. Now that he is for the first time quite incommunicado for a number of years, his history may be reviewed.

In a book called "The Throttle, A Fact Story of Norman Baker," by Alvin Winston, we find that "it took half a century of magnificent living on Norman Baker's part to make the story," and that the reader, when he finishes the story, is supposed to be inspired to write the following letter to his Congressman:

"Dear Sir: THE THROTTLE, A Fact Story of Norman Baker, charges that the radio trust did so and so; the medical monopoly, the American Medical Association, did so and so (fill in the details your own way); the aluminum trust and the rest did so and so. If this is untrue, send Norman Baker to jail. If it is true, send *them* to jail. I demand an investigation, at once. Or I'll vote for a man who *will* investigate. Sincerely,"

One Clement Wood wrote a foreword for this book, in which he stated:

"I admire Franklin Roosevelt so much, for his magnificent start in cleaning up the mess the Republicans had plunged us into, that I shall not nominate Baker for President until Roosevelt is through with the job. My slogan is, Norman Baker as Roosevelt's successor!"

Reference to the text indicates that Norman Baker was born in Muscatine, Iowa on Nov. 27, 1882, and was one of nine children of a family of German descent. It is clearly indicated in "The Throttle" that this is not a large city—"but it was the birthplace of Norman Baker; and Bethlehem is smaller yet."

Again according to "The Throttle," Baker received his education at the East Hill School and the Third Ward School and subsequently attended high school for a year and a half, at which time he apparently went to work in a machine shop. Later, according to the same source, he obtained a position which was offered to his brother in a button factory by claiming that the brushes on the motor were not properly adjusted. According to "The Throttle:" "Now Norman Baker knew that there was nothing wrong with the brushes; but he was an instinctive salesman, and psychologist enough already to be sure that McDermott didn't know a brush from a pulley. He thought it would impress the potential employer. It did. The boy got the job."

"The Throttle" indicates that Baker believed in his own horoscope and the encouraging compliments which it paid to him. The author of "The Throttle" claims that "he once told me earnestly that he was sure that the moon, at least, had an effect on people; else why was it that, near the north pole, where the day is six months long, and the night as long, the women have only one menstrual period a year?"

A number of years later Baker was busy promoting a mind-reading act that was continually going broke, according to "The Throttle," which states that Baker cured himself of pneumonia with the mental determination to get well and a dish of ice cream. His principal in his "act" featuring "mental therapeutics" was known as Madame Tangley. Subsequent to this Baker is said by Winston to have invented and manufactured the "Calliaphone," which was promoted by the Tangley Company, Muscatine, Iowa. The instrument was subsequently heard nightly over XENT.

If one may believe "The Throttle," Baker at that time waged a successful war against the local power and light company at Muscatine, and his activities were supposed to have resulted in the development of a municipal plant which put the company out of business.

His Calliaphone activities were burned out one night, and he started an art correspondence school. Comments "The Throttle:" "It is no wonder that the American Medical Association publicly branded him as a Jack-of-all-trades; to the one-trade mind, such as that of a medical man, there is something suspicious about a man who can do everything, and everything well. No doubt Baker will proudly accept the charge, if to it is added the summary of what he did in all these trades: so that the indictment will then run, Norman Baker, Jack of all trades, and master of all."

About this time he was said to have some rather unusual ideas as to the treatment of shell shock. In the meantime he had reestablished the Calliaphone business on the profits obtained from the correspondence school course in art and began his activities in the radio field, which subsequently developed into Station KTNT at Muscatine. According to "The Throttle" he fought A. T. & T. and what he refers to as the "Radio Trust." His activities in the radio field led him into many other businesses. Because the crowds who attended the programs that were given over the radio complained of the food they obtained in Muscatine, he opened KTNT Cafe. Because they were unable to get gasoline, he opened KTNT Oil Station and, according to "The Throttle," successfully bucked Standard Oil. When the visitors to KTNT complained of blow-outs, he started the manufacture of a tire called The Tangley Pure Gum Rubber Tire, and "other products were added. A mail-order catalog was issued, which Baker still asserts contained more real bargains, more value for the money, than any catalog issued in the United States from that day to this."

He was also operating TNT Magazine Publishing Company, the Baker Press, which printed "The Throttle," and the Baker Cancer Hospital, in addition to the Tangley Correspondence Art School, the Baker Advertising Agency, the KTNT Chain Stores at Muscatine and Davenport, the Western Drug Company and the Mid-West Free Press, in addition, of course, to the Tangley Company, which manufactured the Calliaphone.

He was active in 1929 in the anti-aluminum ware campaign, and, if "The Throttle" can be believed, he first took up with cancer when he was "on the alert to find some matters of sensational public interest" and "at this time Baker, like most Americans, had been led by the pronouncements of the American Medical Association and their subsidiaries the State Boards of Health, to believe that cancer was one of the most dreaded of all diseases and was incurable." He became convinced that he had encountered a real cure and that if this could be proved, *TNT* would carry a story "Cancer Is Curable," if not, a story entitled "Cancer Doctor a Fake."

Apparently Baker had been previously connected with a varicose vein treatment and, with the inventor, Dr. Barewald, opened the Tangley Institute at Muscatine, Iowa, for the treatment of this condition. Subsequently, according to "The Throttle," he reviewed the evidence which became available as a result of his further investigations, and "the December 1929 issue of *TNT* . . . came out with an article revealing all these facts, headed by the proud title 'Cancer is Conquered.'" According to "The Throttle," he had arrived, from his painstaking tests, at the conclusion that "we quote from the December 1929 *TNT*—'the worst cases of cancer can be permanently cured. He challenges the world to investigate and disprove this broad and positive statement by the facts. All that he asks is open-minded investigation.'"

In "The Throttle" we find the statement: "Some said Baker was out for Governor; others, that he aspired to shoulder the Senatorial toga. Baker has no political ambitions . . ." And eight pages further along, in referring to some difficulty that Baker had encountered, it is stated: "There was only one good answer for it: for Baker to accept the proposition that had been made to him, that he run for Governor of Iowa, on the Farmer-Labor ticket." And a few sentences further along: "Next to the two major parties, Baker carried practically every county in Iowa." As nearly as can be determined, this sentence indicates that he ran third in those counties. According to the Associated Press, he was also subsequently a candidate for senator in Iowa in 1936.

One more reference to "The Throttle" is in order. Says the author: "If I were to have the power to dictate the future chapters of his life, I think I should head them:

Chapter XXVIII. License of KTNT Restored; Baker Operates the Two Greatest Stations in All Radio History.

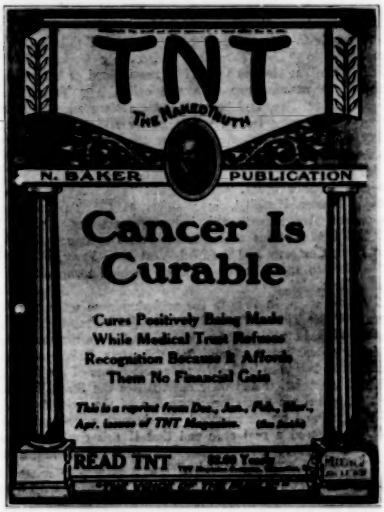
Chapter XXIX. Dissolution of the A. M. A., as a Monopoly, after Government Investigation.

Chapter XXX. Dissolution of the Chain Radio Monopoly, and Appointment of Impartial Federal Radio Commission.

Chapter XXXI. Selling of Aluminumware for Kitchen Use Made a Federal Penitentiary Offense. Poisonous 'Purifying' of Water Forbidden Hereafter.

Chapter XXXII. Norman Baker Elected President of the United States, on Farmer-Labor Ticket. Perhaps of the United States and Mexico. But perhaps that is looking too far into the future. But Jim the canary is whistling his heart out, right over the immense hexagonal desk; and the sturdy little Napoleon is leaning over towards me earnestly, "Now, Alvin, the way this book *ought* to end, is——"

Now the license of KTNT has not been restored to date; the A. M. A. has not been dissolved; chain radio is neither a monopoly nor has it been dissolved; the selling of aluminum ware is not a penitentiary offense, because aluminum ware is not poisonous, as Baker has stated it is; and Norman Baker is in jail with little likelihood of ever becoming president of either the United States or Mexico, let alone both. Incidentally, Baker was not released on bond, because the judge stated that if he were in Baker's shoes he would skip the country if he were out on bond, especially if he had as much financial interest in another country as Baker has in Mexico.



Greatly reduced reproduction of the cover of Norman Baker's Magazine TNT. In it, and in reprints of it, Baker declared that cancer had been conquered, and published details of alleged cures which investigation proved to be not cures but deaths.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION first reported Baker's activities in the issue of April 12, 1930, under the title "Broadcasting Bunk." It was pointed out that over KTNT of Muscatine, Iowa, Baker was promoting the old Hoxsey "cancer cure," which was responsible for many deaths in Taylorville, Ill., a number of years before; that he was claiming that the American Medical Association had offered him a million dollars in order to force the remedy off the market, and that he was using much of the scandalous insinuation that proprietary manufacturers used back in 1905, when they first attempted to hinder the battle of the American Medical Association against the promotion of medical fraud. THE JOURNAL pointed out that the viciousness of Baker's broadcasting was not the lies he told about the American Medical Association but that he induced sufferers from cancer to resort to his nostrum in place of obtaining proper treatment.

In the next issue of THE JOURNAL it was pointed out that the Des Moines *Register* had reprinted the previous article relative to Baker and had made an investigation of its own which established the utter falsehood of the claims made by him in his radio talks. The *Register* revealed many deaths from cancer among the Baker clientele and revealed the menace of Bakerism to be his vicious influence against modern scientific diagnosis and treatment and modern health work. Baker's reply was to state that he was being persecuted by the "Medical Trust," that he was benefiting 25 per cent of cancer, and that the Des Moines *Register* was "cowardly, contemptible and dirty."

That same year record was obtained of an individual who had been told at the Baker Institute that he had cancer of the chin and who stated that the Baker Institute "asked $250 for the cure and $240 to $360 hospital care; also they charged $10 examination before they would look at me. At the university hospital they charged $49.50 in all and I was there just twelve days!" His treatment at the hospital referred to (University of Iowa College of Medicine) was entirely successful. Incidentally, the patient's condition was not cancer of the chin but what is commonly known as "barbers' itch."

The following year the Bureau of Investigation published an article in THE JOURNAL entitled "Norman Baker's Radio Station KTNT." It was stated that Baker was suing the American Medical Association for half a million dollars for alleged libel. In the meantime Norman Baker had applied for renewal of his broadcasting license, but it was denied because Mr. Yost, Chief Examiner for the Federal Radio Commission, pointed out that Baker had failed to establish that a renewal of his license would be in the public interest, convenience or necessity, that in serving the public with radio programs the station had subordinated the interests of the listening public to the interests of the licensee, and that therefore the granting of the application for renewal would not serve the public interest, convenience or necessity and therefore recommended that renewal be denied. Subsequently an extension was obtained by Baker, but he was definitely ordered off the air by June 5, 1931.

The case of Norman Baker versus the American Medical Association, after some four weeks of court proceedings, resulted in a verdict for the Association. Evidence was introduced in the trial justifying the statements on which libel was charged. At that time THE JOURNAL pointed out that "the evidence brought forth arouses pity for the situation that can permit the poor, the sick and the ignorant to be exploited. Justification by the courts of the condemnation given by THE JOURNAL to such exploitation repays but in small measure those who have suffered. The only answer that charlatanism can make to the publication of facts is a suit for libel. In its efforts to protect the public, THE JOURNAL and the American Medical Association have not been rarely compelled to respond to such suits. Fortunately, the Association is able to answer adequately. The appreciation of the medical profession and of the public is tendered to all those who have cooperated to bring to a successful issue the case of Norman Baker versus the American Medical Association." The following issue of THE JOURNAL carried a five page report of this case.

Later the same year THE JOURNAL published an editorial entitled "Voices Across the Rio Grande," which referred to the John R. Brinkley radio station, XER, and stated that it was anticipated that Baker would also operate from across the river. In a report on "Dr. J. L. Statler and Norman Baker" published by the Bureau of Investigation in THE JOURNAL for July 31, 1937, it was noted that Baker was operating Station XENT at Nuevo Laredo, Mexico, and was again applying for the right to open a station in Muscatine. In the meantime Baker was operating hospitals at Muscatine and Laredo, Texas, subsequently moving the Laredo institution to Eureka Springs, Ark. Furthermore, the Federal Communications Commission decreed that the manufacture of reproductions in this country and their transportation to a foreign country for the purpose of

being broadcast from a foreign station so that they were received consistently in the United States was a violation of the regulations of the Commission. This decision, however, was subsequently reversed.

On April 15, 1939, THE JOURNAL published an editorial concerning the use of Baker's "cancer cure" in New Zealand and stated that an investigating committee reported:

"We have no doubt that Baker's fluid is a powerful sclerotic agent and can cause great local destruction. Compared with surgical treatment, destruction by a sclerosing or caustic fluid seems like a reversal to the treatment of the Middle Ages, causing unnecessary mental distress, delayed healing and increased risk of septic infection. We have had no evidence whatever to show that Baker's fluid has any selective powers in the destruction of cancer cells."

Under the heading "Arkansas Medical News" in THE JOURNAL for Sept. 30, 1939, it was noted that "Norman Baker, who moved his 'cancer cure' business to Arkansas after being accused of quackery in Iowa [he was fined $1,000 and sentenced

Cancer Is Conquered

Article I

CANCER is conquered. The greatest discovery in medical science in years—a positive cure for cancer, that dread disease which has taken toll of millions of lives, caused thousands to com-

Photo No. 1

mit suicide and driven other thousands to insanity—has been revealed by an investigation conducted by Norman Baker, publisher of TNT magazine and owner of the Norman Baker Enterprises and radio station KTNT, who was assisted by a physician and member of his staff.

Seeing is believing. Mr. Baker and his fellow investigators have seen with their own eyes enormous and malignant cancers in advanced stages of growth rapidly yield to a new and painless treatment, soften and disappear. They selected the cancer cases themselves for observation after they had determined beyond any doubt that they were authentic cases of cancer. They have watched these true cases of cancer under treatment and have seen the cancers grow smaller and pass away.

Will Spread the Truth

As a result of these investigations, Mr. Baker is ready to announce to the world that a treatment has been found that permanently cures cancer.

The investigation has covered several months of painstaking observation of selected cases. It will be continued for sometime and results will be reported in TNT magazine. The results observed to date have thoroughly convinced Mr. Baker that cancer has been conquered. He has decided, in consequence, to place TNT magazine and radio station KTNT wholeheartedly and unreservedly behind a campaign to spread this truth throughout the world.

Importance of the Discovery

It is hardly necessary to explain the importance of this discovery. Cancer is one of the most painful, hideous and terrible diseases known to Man. It is advancing at an alarming rate in its inroads on mankind. One person in every ten now has incipient or malignant cancer. Unless it is checked by medical science its rapid spread will make it the major disease menace to the human race. Statistics show that more than 100,000 persons die yearly of cancer. Science is engaged in a literal war of defense against it and is steadily losing ground. As a result, cancer has become one of the chief concerns of medical science. No disease claims more attention and causes more scientific investigations. A positive and permanent cure has been found for this disease. A priceless blessing has been conferred on the human race. One of the greatest causes of human suffering will soon be removed and the hearts of millions will be gladdened.

The frightful nature of this disease is indicated by the pictures on this page. Photo No. 1 shows cancer of the face. The photograph was mutilated so that the patient's features would not be recognized. A cancerous growth like this eats its way from the outside into the mouth so that the patient is not able to eat solid food and subsists on liquid food until the end comes.

Photo No. 2 shows a cancerous breast, with one breast removed. This is the most prevalent from of cancer. Men will never realize the untold agony women suffer from it. Photo No. 3 shows another cancerous breast. Here the cancer is spreading to the upper part of the shoulder and under the arm.

What Caused the Investigation

The investigation that revealed this great discovery was started by Mr. Baker after a number of seemingly miraculous cures of very severe cases of cancer had been brought to his attention. The physician who was effecting these remarkable cures had encountered determined opposition from his profession and was having a hard fight to retain his license. This situation appealed to Mr. Baker as demanding attention. Was a valuable truth about to be suppressed because it might disturb or upset established methods and an organized and intrenched interest? An impar-

Photo No. 2

tial investigation ought to reveal the truth. A successful investigation would either establish the value of the alleged discovery and thereby confer a priceless blessing on humanity, or else it would expose the treatment as a fake and the perpetrator as a charlatan, thus sav-

Photo No. 3

ing numberless prospective victims from losing their money uselessly or to their physical injury. Added to these motives was Mr. Baker's motive as a publisher keenly on the lookout for a feature article.

Real Test Planned

The investigation was started without bias or prejudice either for or against the alleged cure, but solely for the purpose of revealing the truth. The first step was a visit with the physician who had the cancer formula. The interview impressed the investigators very much. Patients were seen in various stages of the treatment and the evidence they supplied as to the efficacy of the treatment was overwhelming. The formula was not only being applied to the cure of cancer, but to the cure of other diseases arising from bad nutritional conditions, such as diabetes, Bright's disease, tuberculosis, goiter, stomach ulcers, gall stones and rheumatism.

The physician gave the investigators many names and addresses of patients whom he stated had been cured for years and were now living without a trace of cancer. He asked the investigators to interview them. Acceptance of this offer was deferred for the time being in favor of a test that would be of a much more fundamental and convincing nature. The testimony alone of alleged former patients would not be conclusive, as testimonials are often obtained by payments or personal influence.

As the basis of the investigation, Mr. Baker proposed that he select five test patients for the treatment after it had been positively determined that they had cancer. The actual results obtained from the treatment of these selected patients would fairly guage the value of the remedy. He proposed to obtain these patients by giving talks over his radio station, KTNT, in which he would call for volunteers for a test treatment for cancer. The selection was to be made, if possible, from patients coming from different parts of the country, showing cancer in different stages of growth, and in different parts of the body. In addition Mr. Baker and his assistants would avail themselves of the offer to interview or write to patients said to have been cured years ago and who had not suffered the return of the cancers.

Five Patients Selected

This challenge was immediately accepted. A stipulated price was agreed upon for the test patients, and Mr. Baker agreed to pay the expenses of some of the patients. In the accompanying pages are presented pictures of the test patients selected showing the cancerous growths. In the January issue of TNT pictures of cured patients together with complete data will be presented. We will not publish the names and addresses of the patients as they do not wish undue publicity, but assure our readers that the original photographs, letters and affidavits connected with the investigation, and the identity of the patients, are a matter of record, and will be furnished any government or private institution, physician, medical group or association desiring to investigate for the purpose of giving the truth to the public.

As a publisher, Mr. Baker does not desire credit for being the first to reveal this discovery to the world. He has, therefore, sent copies of this article to the press and has invited the newspapers to verify the facts claimed as a result of his investigation, or use all or any part of this article.

First Patient Treated

The first patient to respond to the radio call for the test treatment was a woman who lives 22 miles from Muscatine and was suffering from a very bad abdominal cancer. She had been treated by local physicians and the Medical College of the State University of Iowa for cancer. As a last resort radium

Photo No. 4

was used. The result of these radium burns are shown in the photograph of this woman, marked Photo No. 4. This radium burn was about four inches long and when spread out was

Miniature reproduction of a double-page spread of the Baker article in his magazine TNT, telling the public that "Cancer Is Conquered."

to one day in the Muscatine county jail following his plea of guilty to an indictment charging him with practicing medicine without a license], surrendered to the United States marshal on a federal indictment charging him with using the mails to defraud." The conclusion of this case is referred to in the opening paragraph above. Others who have been associated with Baker for a number of years and who were indicted along with him will be the subject of an early article in these pages.

The trial was quite suggestive of the trial of Baker versus the American Medical Association and, needless to say, the testimony of the experts was very similar. Evidence was introduced to show that Baker had expected to make a million in a year's time, that he employed the word "suckers" in this connection, and that former employees testified that they had never seen any cancer cured. According to an Associated Press release from Little Rock, Ark., the following note was entered in evidence:

"Get a belly-full of courage and nerve and tell the first ———— to go to hell that tells you he will cancer [cancel?] your license. Never yet as any Dr. even been cancelled or revoked and what in hel do you care if they fail to issue you a card each year. They didn't do a dam thing to Stat did they and I bla-bla it over the radio and told them old Stat would go right along and practice in Iowa without your dam old card, didn't I tell them that—didn't he work all year—didn't he get his card. To hell with that dam bunch of rats, they don't bludd [bluff?] me one minute . . ."

The identity of the author is self evident. "Stat" is presumably J. L. Statler, M.D. Statler and R. A. Bellows, the superintendent of the Baker Hospital, were also sentenced in this case—Statler for one year and one day and Bellows for two years.

The defense offered twenty-seven witnesses in support of the contention that Norman Baker and four associates had acted in "good faith" in advertising cures for cancer and other diseases through the mails and over the radio. Several of the witnesses admitted on cross-examination that they had come to testify at the trial in response to telegrams sent them by Norman Baker at Little Rock. Others said they had had letters from the Baker Hospital. One individual told the court that he had volunteered to come to testify "to help Mr. Baker out." Needless to say, the evidence of these individuals was riddled and failed to stand up as adequate evidence of the usefulness of the procedures employed by Baker.

Baker's "experts" included Dr. E. M. Perdue and Dr. Charles Loffler. Both have been subjects of adverse reports by the Bureau of Investigation in these pages. Again and again the same names appear whenever charlatans are called to account in the courts. Is there not an old proverb about "Birds of a feather"? The government experts included Dr. Max Cutler of Chicago and Dr. Francis Carter Wood of New York City. They testified without remuneration and the public and medical profession owe them appreciation.

A few days after being found guilty, Baker was fined $4,000 and sentenced to four years' incarceration. A motion for a new trial was denied.

Four thousand dollars isn't a lot of money for a Baker, and four years isn't an eternity, but it meets the situation for the present admirably. Most admirably!

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Correspondence

PROTEST AGAINST COMMERCIAL EXPLOITATION OF A SCIENTIFIC CONTRIBUTION

To the Editor:—In my mail January 3 I received a form letter on the stationery of Sutliff & Case Company, Inc., of Peoria, Ill., a circular advertising "Thio-Cara Compound and Thiocyan-Tabs" and what purported to be a transcript of a ten minute address which I gave before the Inter-State Post Graduate Medical Association meeting held in the Palmer House, Chicago, Nov. 1, 1939, on the subject "Experiences with the Surgical Treatment of Hypertension."

On the same date, on the advice of the Bureau of Legal Medicine and Legislation of the American Medical Association, I wrote this company calling attention to the fact that it had used my name in connection with advertising its product without my knowledge or my consent. I informed the company that the further use of my name in that connection was forbidden and that it must stop such use immediately.

I also stated that the material which purported to be a stenographic report of my address before that meeting was not submitted by me to any of the officers of that association nor was any other paper submitted to them; that the material was never seen by me prior to January 3 and that it had never been corrected or approved by me; that the statement that ". . . we have obtained his material and are attaching same hereto; . . ." thus indicating thereby that it obtained that material from me, was entirely a false statement.

I have sent all of the correspondence involved to the Council on Pharmacy and Chemistry and the Bureau of Legal Medicine and Legislation of the American Medical Association, including the most recent demands by me on this company to send a letter of retraction dictated by me and signed by the president of Sutliff & Case Company, Inc., to each of the doctors previously circularized.

Perhaps you will decide that this type of action by a drug company, which is indefensible, should be called to the attention of other physicians and surgeons.

LOYAL DAVIS, M.D., Chicago.

VITAMIN DEFICIENCIES AND RESTORED FOODS

To the Editor:—The publication in THE JOURNAL, Dec. 9, 1939, by the Council on Foods of Dr. Cowgill's article on The Need for the Addition of Vitamin B_1 to Staple American Foods marks an important step in this field and deserves the attention of American physicians. While evidence of deficiency of this factor in the diets of the Western nations has been accumulating during the past ten years, a quite properly conservative attitude toward these claims has been maintained by the Council. In publishing this article the Council has evidently decided that the facts are now so well established as to warrant their presentation as authoritative, and that they are of such importance that the medical profession and the public should be made aware of them.

Chief among these facts are the following:

1. Changes in milling practice and in the consumption of cereal products during the past hundred years have reduced the vitamin B_1 content of "good" diets from over 1,000 international units daily to 500 units or less. The latter figure does not furnish a desirable margin of safety and for some individuals, and in certain conditions, is definitely suboptimal.

2. A large part of our population subsists regularly on diets well below the 500 unit level and definitely in the deficiency zone.

3. Clinical experience with supplementary vitamin B_1 administration confirms strikingly the thesis that many persons suffer from a chronic shortage of B_1.

4. It is desirable that means be found for augmenting the vitamin B_1 intake of the population as a whole.

Dr. Cowgill's able discussion of this situation leads him to conclude that "prosecution of a program for fostering addition of vitamin B_1 to staple American foods according to the principles discussed in the present report would be definitely in the interests of the public." It is at this point that his proposed program, that of adding thiamin to wheat flour and cereal products, calls for critical examination and discussion. The embryo of grain is a highly complex reservoir of materials required for the growth and development of the plant, comparable as such to egg yolk, and as little understood. Furthermore, our knowledge of the essential dietary factors is far from complete. It happens now to be known that loss of this part of the cereal entails a nutritionally significant loss of vitamin B_1 from the diet. One is not justified in assuming that it entails no other significant losses until our knowledge of nutrition is more advanced than it now is. To propose solving this problem by adding thiamin to the diet is to evade the very real possibility that this measure will not solve the whole problem but will rather delay the search for a better solution.

Until all the factors lost in milling are known and it is known that each of the others is adequately supplied by other foods, the logical solution of the problem presented is the restoration of the grain embryo itself to the diet.

How this is best to be done is a matter for discussion, but there can be no question as to its desirability. Modern technology should be able to find a way to produce whole grain flours with satisfactory keeping qualities, to develop more useful whole grain products and to educate the public to use them. There are stable preparations of cereal embryo on the market for supplementing the diet; while these may be economically beyond the reach of the poor, a wider use might reduce their cost to a level which would make them more generally available.

Cereal germ is cheap and plentiful. To discard it from our human food supply is nutritional wastage on a huge scale, and one is not justified in assuming that the addition of thiamin alone to the present food supply will compensate for its loss. How to get it back into the diet is a technical problem which should not be impossible of solution and it would seem to be a more desirable objective than that proposed by Dr. Cowgill.

HENRY E. MARKS, M.D., New York.

THE PLUMMER-VINSON SYNDROME

To the Editor:—The editorial entitled the "Plummer-Vinson Syndrome and Cancer" in the Nov. 11, 1939, issue gives an erroneous impression regarding the authors of the syndrome.

In collaboration with Drs. William A. Swalm and Chevalier L. Jackson I have pointed out (Syndrome of Hypochromic Anemia, Achlorhydria and Atrophic Gastritis, THE JOURNAL, July 10, 1937, p. 108) and Correlation of Clinical and Gastroscopic Findings in Chronic Gastritis (*Rev. Gastroenterol.* **3**:19, 1936) that Patterson and Kelly previously described this syndrome. I referred to the fact that D. R. Patterson (*Brit. J. Laryng., Rhin. & Otol.* **34**:285 [Aug.] 1919) and A. B. Kelly (*ibid.*, p. 289) had separately analyzed and presented a detailed group study from their respective clinics.

I feel that it is only fair to credit the priority of Patterson and Kelly's work, since the "Patterson-Kelly" syndrome was described three years prior to that of Plummer and Vinson.

In our article in THE JOURNAL just cited we reviewed, as was done in your editorial, the possibility of cancerous development in this group, but in the course of from four to five years of observation this has not occurred in our series. Of course appropriate therapy may have been prophylactic. Time and further experience will tell.

LESTER M. MORRISON, M.D., Philadelphia.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

JACKETS AND EXTERNAL APPLICATIONS IN PNEUMONIA

To the Editor:—In seeing cases of pneumonia in consultation, it seems to be the rule to find the patient within a heavy cotton jacket and heavily smeared with camphorated oil or some menthol-ated product and not infrequently with "antiphlogistine." I should like to ask whether there is any scientific proof that any external applications are of definite value in pneumonia or even in pleurisy. If of value, is the value in pain relieving or in producing resolution of the pathologic process? I know the psychic value of this out of the question. Is there any justification in continuing the use of the cotton jacket, so-called pneumonia jacket? On the other hand, are they not actually harmful if not uncomfortable to the patient?

M.D., Washington.

ANSWER.—Reliable and cautious physicians observe relief of pain in pneumonias after counterirritation applied in a number of different ways. Aside from relieving pain there is no scientific proof that any external applications are of definite value in pneumonia or pleurisy. Embrocations, counterirritation, external applications and "antiphlogistine" (cataplasm of kaolin) have no effect on resolution. Resolution reflects an immunologic process, and the immunity mechanism is unaffected by counterirritation. Ever since emphasis has been placed on the etiology and specific therapy of pneumonias, many of the older therapeutic procedures have lost significance. The use of the so-called pneumonia jacket has become passé; it serves no useful purpose and has been discarded in many large services where pneumonia is given special attention and where excellent low mortality rates are obtained without it. Pneumonia jackets and counterirritants are harmful if they incorrectly place therapeutic emphasis so that the physician loses sight of the immunity problem involved. They may be uncomfortable, are heavy for prostrated patients to lift and may interfere with physical examinations, and when they are removed the patient may become chilled. They may interfere with necessary loss of heat, preventing evaporation, the chief cooling process, so that the fever is increased.

UNUSUAL NEUROLOGIC SYMPTOM FROM PNEUMONIA

To the Editor:—A well developed boy of 12 contracted pneumonia of the right lower lobe two months ago. Examination of the sputum revealed the influenza bacillus, the streptococcus and the pneumococcus (which could not be typed). There were 8,500 white blood cells with about 85 per cent polymorphonuclear leukocytes. The temperature ranged from 104 to 105 F. About the second day of his illness the patient complained of pain in the left forearm and also of inability to flex the terminal phalanx of the left thumb. He was given sulfapyridine on the fifth day and his fever promptly subsided, although the pain redux continued for about three weeks. During his convalescence he complained of pain in the left arm and in both feet. He was able to walk only with difficulty. There was, however, no swelling at any time. The boy now has completely recovered, no longer has any pain and is attending school. However, the use of his left thumb has not returned. I have had him examined by a neurologist but nothing has been found. What did the boy have, and what can I do to restore the function of his thumb?

M.D., New York.

ANSWER.—The data concerning the pneumonia do not permit an etiologic diagnosis to be made but suggest the atypical form of pneumonia, not bacterial in origin, which was prevalent during the last year or two. The normal leukocyte count and the evidence of delayed resolution are characteristic of this disease. Its course was not influenced by sulfapyridine, and in the case described the subsidence of the fever may have been spontaneous, since the average course of this pneumonia lasted from four to five days.

Whatever kind of pneumonia the patient had, the complicating neurologic symptoms described are most unusual. The absence of swelling and of continued fever rules out multiple focal purulent arthritis. The symptoms were perhaps caused by multiple peripheral neuritis in spite of the fact that no other abnormal neurologic signs were found. In this event it is highly probable that the function of the thumb will gradually return to normal if, on electrical examination, no reaction of degeneration of the median nerve is found. Restoration may be hastened by massage, heat, exercise and stimulation with a faradic current.

EPINEPHRINE AND ELECTRIC SHOCK

To the Editor:—Is there any literature on contraindications to the use of epinephrine in the treatment of electric shock?

T. J. Cash, M.D., Johnstown, Pa.

ANSWER.—According to D. R. Hooker (*Am. J. Physiol.* **91**:305 [Dec.] 1929) ventricular fibrillation is the common cause of death in electric shock; this is especially so in the low voltage shock from ordinary house currents. Epinephrine may also induce fatal ventricular fibrillation in conditions in which the heart is hyperirritable from the effects of poisons (benzene, chloroform). H. E. Hoff and L. H. Nahum (*J. Pharmacol. & Exper. Therap.* **53**:235 [Nov.] 1934; *Am. J. Physiol.* **110**:675 [Jan.] 1935) used acetyl-beta-methylcholine chloride for the prevention of ventricular fibrillation by electric shock and found that epinephrine counteracted the effect of the acetyl-beta-methylcholine chloride or in larger doses increased the possibility of fatal ventricular fibrillation. They also mentioned a case in which a man apparently recovered from the effects of a shock and then died when he got up to walk away. They suggested that this was due to the effect of an increased secretion of epinephrine on the heart. Hooker studied the effect of epinephrine on the isolated cat heart and found that it was ineffective in stopping fibrillation but that after the fibrillation had been stopped by other means epinephrine was of use in increasing the strength of contraction of the heart muscle.

While there has been no specific study of the effect of epinephrine on a heart stopped by an electric shock comparable to that causing heart failure in man, most experiments seem to contraindicate its use.

RECURRENT DISLOCATIONS OF SHOULDER

To the Editor:—A girl aged 20 who is in good health has had repeated anterior dislocations of the right humerus. The dislocations are easily reduced under light anesthesia. After the first accident her arm and shoulder were in a plaster cast for six weeks, but there have been four dislocations since. After each accident she wears her arm in a sling for about two weeks and then she considers herself recovered until the next time. She refuses surgical treatment and is anxious to know if there is any device she could wear that would act as a preventive against further dislocations. Any suggestions would be appreciated.

Herbert J. Schwartz, M.D., Challis, Ida.

ANSWER.—Recurrent dislocations of the shoulders are most satisfactory treated by one of two or three operative procedures, probably the most successful being that described by Nicola. No mechanical device which permits reasonable use of the arm can be entirely successful in preventing these dislocations. The most effective consists of a cuff about the arm at the level of the middle third of the humerus and a band or belt about the thorax just below the breasts. A light chain such as that worn on watches may then be attached to the band on the arm and, through a series of buttonhole openings in the clothing, to the chest strap in the axillary line. This chain should be just long enough to permit abduction of the elbow from the side for a distance of 8 inches, and forward flexion is then automatically limited.

This type of device has been reasonably successful, even when worn by football players, but it is more difficult to prevent redislocation of the true anterior type than if the weak spot in the capsule were more definitely inferiorly placed.

PREMENSTRUAL ASTHMA AND ENDOCRINES

To the Editor:—In The Journal, Oct. 21, 1939, page 1586, there is the statement, in answer to Dr. R. E. Shaw's query, "Every one agrees that many female asthmatic patients are worse just before the flow and feel better as soon as menstruation begins. Because of this, many physicians give injections or tablets of ovarian material." I fail to see why ovarian material should be given in such a case, since it is known that with the menstrual flow the estrogenic hormone in the blood diminishes abruptly. If at this point the asthmatic attacks improve, why should one inject estrogenic substance to stimulate the premenstrual state? This would be most illogical; as a matter of fact such injections are as a rule accompanied by aggravation of the asthma unless it has no relationship to the ovarian status.

William Wolf, M.D., New York.

ANSWER (This was referred to the consultant on whose answer Dr. Wolf comments).—From clinical experience there is no doubt at all that a good many female asthmatic patients in whom asthma is intensified before menstruation have been benefited by the administration of estrogenic preparations. There are also reports of good results from corpus luteum. It is difficult to defend this result from the theoretical point of view, but many who see considerable numbers of asthmatic patients will testify to the fact that after taking the ovarian extract the patients are able to go through subsequent menstruations with little or no asthma.

POSSIBLE CALCIFIED TUMOR OF CHOROID PLEXUS

To the Editor:—I should like information regarding the treatment for an enlarged and calcified choroid plexus of the left lateral ventricle in a woman aged 34. The diagnosis was made by a ventriculogram. This woman complains of excruciating pain in the left side of the head at frequent intervals, absolute insomnia and occasional spells of dizziness; she sees spangled lights at times and has double vision in the lateral gaze. The latter has been explained as a third and fourth nerve vascular lesion. The eyegrounds are normal with the exception of some mild sclerosis. The eye fields are normal. Blood count shows 14,000 white cells and 4,500,000 red cells. Differential count and blood smears are normal. There is no nausea, but there have been frequent periods of vomiting; this has not been characteristically projectile, but the food would well up into her mouth much like a regurgitation without warning. X-ray study of the gastrointestinal tract and gallbladder yields negative results. The urine is normal. The Wassermann reaction of the blood is negative. The electrocardiogram is normal. The basal metabolic rate is —22 per cent. The pulse is regular and within normal limits. The temperature is normal. The blood pressure is now 120 systolic and 70 diastolic but has been down to 104/64, and the patient has shown signs of orthostatic hypotension. There are no focal signs, but the woman has had spells characterized by generalized numbness of the body, flushing of the face, lasting only a few seconds, and incongruence of her environment, followed by precordial palpitation and diarrhea. Results of further neurologic examination are negative. Are there any similar cases reported? Can you refer me to the literature? How would you explain the leukocytosis? Can it be dehydration? What would be the procedure of treatment?

M.D., New York.

ANSWER.—It is only occasionally that calcified tumors of the choroid plexus cause trouble. Without seeing the ventriculograms, which of course are all important in diagnosis, one would feel that the burden of proof was on the diagnosis as stated. However, it is entirely possible. The history suggests a brain tumor near the midbrain or third ventricle. No explanation of the leukocytosis is apparent; it may or may not be relevant but is not due to dehydration. A series of tumors in this region was reported by W. E. Dandy (Benign, Encapsulated Tumors in the Lateral Ventricles of the Brain, Baltimore, Williams & Wilkins Company, 1934). The treatment is removal of the tumor, the exact localization of which can be made by ventriculography.

DAIRY PRODUCTS AFTER MEAT

To the Editor:—The Hebrew dietary laws, as prescribed in the Talmud, prohibit the ingestion of milk or other dairy products for at least six hours after eating meat; nor may meat be eaten together with milk. No reason or explanation is given for such an edict. It is assumed, however, by some authorities that such a prohibitive regulation was formulated as a purely sanitary and hygienic measure against certain gastrointestinal disturbances which might result from such a combination of foods when consumed in tropical climates. I shall appreciate information as to whether any research or experimental work has been done by scientific medicine along these lines and what the opinion of medical authorities is relative to the meat-milk problem.

M.D., Connecticut.

ANSWER.—There is no meat-milk problem although good sanitation and hygiene must be observed in the preparation and handling of meat and milk and, indeed, all foods. It is likely that early Hebrew dietary laws were formulated as sanitary measures, and a fairly complete discussion of this interesting topic is available in the following articles:

Jewish Ceremonials and Food Customs, *J. Am. Dietet. A.* **4**:91 (Sept.) 1928.
Jewish Contributions to the Hygiene of the Digestive Tract, *M. J. & Rec.* **125**:49 (Jan.) 1927.
Jewish Dietary and Hygienic Laws, *Pub. Health J.* **14**:483 (Nov.) 1923.
Jewish Food Habits, *J. Am. Dietet. A.* **9**:389 (Jan.) 1934.
Historical and Biological Evolution of the Human Diet, *Am. J. Digest. Dis.* **1**:215 (May) 1934.

MAXILLARY SINUSITIS IN PREGNANCY

To the Editor:—A patient six months pregnant has had an acute attack of chronic maxillary sinusitis. Her face swells unilaterally, with slight pain. Constricting drugs on the mucous membrane evidently open the passage but little, if any, discharge results. Every few days she complains of a sore throat, which is injected on inspection. The problem is the choice of some type of vaccine, either stock or autogenous (which kept her free from attacks for about eighteen months), roentgen therapy or ultrashort wave diathermy. Are any of these procedures contraindicated in pregnancy?

M.D., New York.

ANSWER.—The history as given assumes that there has been nothing left undone to establish a diagnosis. Unilateral swelling of the face, while it may occur, is not common in maxillary sinusitis and it would require careful study and x-ray examination to make sure that there is no cyst or new growth present. The fact that constricting drugs do not shrink the mucous membrane should impel the examining physician to make sure by history, nasal smears, and other measures that there is no concomitant allergic condition present.

As to the choice of treatment, any one of the treatments mentioned can be used or all three of them without affecting the pregnant state. When these treatments are instituted, the physician should know that he uses them empirically and that while none of them are curative, or uniformly successful, palliation of symptoms is also a concern of the doctor and provides the justification for such treatment.

LACTATION AND MENSTRUATION

To the Editor:—Does menstruation in a nursing mother affect the baby? If so, in what ways?

L. A. Crowell, Jr., M.D., Lincolnton, N. C.

ANSWER.—The breast milk of a nursing mother is said to be qualitatively unaltered during this period. Occasionally there is a lessened supply of breast milk during the menses, and the reaction on the baby may be one of hunger. The emotional factor and increased nervous tension which accompany the menstrual period in some women may be the cause of this diminution in quantity.

In the Middle Ages it was common practice to nurse the child until the first deciduous dentition was completed. Among many primitive races nursing at the breast is common until the child is of a considerable age. No difficulty arises from menstruation on the part of the mother. It is apparent therefore that menstruation per se has no direct effect on the breast milk or the infant, and it has never been recommended as a contraindication to nursing.

PNEUMOCOCCIC ARTHRITIS OF HIP

To the Editor:—Kindly send me information regarding frequency, prognosis and treatment of pneumococcic infection of the hip following lobar pneumonia. I am especially interested to know the proper treatment in these cases.

Hilmar R. Schmidt, M.D., Petersburg, Va.

ANSWER.—Pneumococcic infections of the hip are rare, although a definite percentage incidence cannot be given. In one series of 1,800 cases of pneumonia, pneumococcic arthritis was observed as a complication in only two cases. The disease usually occurs in children, although it may occur in adults. Treatment in the past has been essentially conservative, aspiration being performed repeatedly if necessary and drainage instituted only when the condition seems to be getting out of control. In addition, the surgeon now has the advantage of the use of sulfanilamide and the drugs of that group, which have proved so successful in the treatment of pneumonia. Therefore it would seem best in the light of this knowledge to adhere even more closely to surgical conservative measures.

INHERITANCE OF LOOSE JOINTS

To the Editor:—Can you give me information with regard to the hereditary tendency and pathology of abnormally loose joints?

George C. Oldag, M.D., Paulina, Iowa.

ANSWER.—Congenital relaxation of joints, produced by overlong ligaments and other capsular structures permitting abnormal ranges of motion, appear to be simple recessive hereditary characteristics. In the recessive patterns the appearance of mild abnormal conditions, such as the one referred to, is not likely to be inherited by the children unless the marriage is between cousins.

MALINER'S TEST

To the Editor:—In the December 9, 1939 issue of The Journal on page 2171, M.D., Illinois, asks for information regarding Maliner's test. The reply unfortunately, to my belief, was misleading, and I wish to correct it. The article by W. F. Matthews and myself in the Archives of Pediatrics **56**:142 (March) 1939 was merely a corroboration of work done by Master with a few modifications. This test has never to my knowledge been personalized. However, the term "Maliner's test" has frequently been attached to work done by me on the use of epinephrine 1:1,000 as a means of accentuating organic precordial murmurs. This was first reported in the Archives of Pediatrics **49**:305 (May) 1932 and later by Maliner and Okin in the Journal of Pediatrics **10**:77 (Jan.) 1937.

Martin M. Maliner, M.D., Brooklyn.

VISUAL DISTURBANCES AND SULFANILAMIDE

To the Editor:—With regard to the query of Dr. Manfred Landsberg in The Journal, Dec. 16, 1939, page 2260, I have seen a patient whose refraction became 6 diopters more myopic following a small dose of sulfanilamide. There was almost total obliteration of the anterior chamber of both eyes. I was unable to determine whether this was due to swelling or forward displacement of the lenses because in my fear that a glaucoma might develop I had used physostigmine to constrict the pupil. In three days the eyes had returned to normal.

Ray W. Hughes, M.D., Detroit.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, February 3, page 433.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II, Feb. 12-14; Part III, June or July, to be given in medical centers having five or more candidates desiring to take the examination. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Oral.* Part II. New York, June 10-11. Applications must be received 60 days prior to examination. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: November 1940. *If a sufficient number of applications are received before March 1 there will be an examination at New York, June 10-11.* Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *General oral and pathologic examinations (Part II) for all candidates (Groups A and B) will be conducted in Atlantic City, N. J., June 7-10. Applications for admission to Group A, Part II, examinations must be on file not later than March 15.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Oral, New York, June 8-10; Cleveland, Oct. 5. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 3-5. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: New York, June 10-11. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: Kansas City, Mo., May 18, following the Region III meeting of the American Academy of Pediatrics, Seattle, June 2. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Cincinnati, May 17-18. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: New York, June 7-10. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave., Rochester, Minn.

Texas November Examination

Dr. T. J. Crowe, secretary, Texas State Board of Medical Examiners, reports the written examination held at Austin, Nov. 20-22, 1939. The examination covered twelve subjects and included 120 questions. Eighteen candidates were examined, fourteen of whom passed and four failed. Fifty-four physicians were licensed by reciprocity. The following schools were represented:

School	PASSED Year Grad.	Per Cent
University of Colorado School of Medicine	(1934)	86.5
Harvard Medical School	(1939)	84.8
University of Michigan Medical School	(1935)	83.4
Meharry Medical College	(1927)	76.
Medizinische Fakultät der Universität Wien	(1925)	79.8
Christian-Albrechts-Universität Medizinische Fakultät, Kiel	(1924)	78.2
Hamburgische Universität Medizinische Fakultät	(1937)	77.8
Schlesische Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau	(1936)	78.8
Vereinegten Friedrichs-Universität Medizinische Fakultät, Halle-Wittenberg	(1926)	75
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia	(1937)	79.5
Osteopaths *	75.7, 78.6, 79.2,	83.3

School	FAILED Year Grad.	Per Cent
Japan Medical College, Hongo	(1910)	64.5
Universidad Nacional Facultad de Medicina, México	(1928)	72.5, (1937) 62.3
Osteopath *		70

School	LICENSED BY RECIPROCITY Year Grad.	Reciprocity with
College of Physicians & Surgeons, Little Rock	(1911)	Arkansas
University of Arkansas School of Medicine	(1937)	Arkansas
College of Medical Evangelists	(1931), (1933) (1938) Tennessee, (1939) North Carolina	California,
University of Colorado School of Medicine	(1932)	Colorado
Yale University School of Medicine	(1899) (1932) Michigan	Connecticut,
Howard University College of Medicine	(1937)	Tennessee
Emory University School of Medicine	(1929)	Georgia
Northwestern University Medical School	(1936), (1938)	Minnesota
University of Illinois College of Medicine	(1929), (1937)	Illinois
State University of Iowa College of Medicine	(1936)	Iowa
University of Kansas School of Medicine	(1926)	Kansas
Flint Medical College of New Orleans University	(1905)	Arkansas
Louisiana State University Medical Center	(1936), (1938), (1939) Louisiana	
Tulane University of Louisiana School of Medicine	(1934) (1935), (1937), (1938, 3) Louisiana	Minnesota,
Johns Hopkins University School of Medicine	(1936)	New York
Harvard Medical School	(1928)	Illinois, (1936) New York
University of Minnesota Medical School	(1938), (1939)	Minnesota
St. Louis University School of Medicine	(1939)	Missouri
Washington University School of Medicine	(1935), (1938)	Missouri
Creighton University School of Medicine	(1933) (1937) Ohio	Kansas,
Omaha Medical College	(1900)	Nebraska
Syracuse University College of Medicine	(1914)	New York
Ohio State University College of Medicine	(1921)	Ohio
University of Cincinnati College of Medicine	(1935)	Ohio
University of Oklahoma School of Medicine	(1935)	Oklahoma
Jefferson Medical College of Philadelphia	(1928)	New Mexico
University of Pennsylvania School of Medicine	(1925) (1936) Minnesota	Mississippi,
College of Physicians and Surgeons, Memphis	(1910)	Arkansas
Meharry Medical College	(1928) Mississippi, (1937)	Tennessee
Sewanee Medical College	(1900)	Louisiana
University of Tennessee College of Medicine	(1936, 2) (1937) Louisiana	Tennessee,
University of Wisconsin Medical School	(1935)	Wisconsin
University of Bristol Faculty of Medicine	(1934)	New Jersey

* Examined in medicine and surgery.

Georgia October Examination

Mr. R. C. Coleman, secretary, Georgia State Board of Medical Examiners, reports the written examination held at Atlanta, Oct. 10-11, 1939. The examination covered ten subjects and included 100 questions. An average of 80 per cent was required to pass. Twelve candidates were examined, all of whom passed. Eleven physicians were licensed by reciprocity and five physicians were licensed by endorsement. The following schools were represented:

School	PASSED Year Grad.	Per Cent
College of Medical Evangelists	(1939)* 83.2,	86.2
Emory University School of Medicine	(1938) 87.2, (1939)	84.1
University of Georgia School of Medicine	(1939)	83.8
The School of Medicine of the Division of Biological Sciences	(1936)	82.6
Tulane University of Louisiana School of Medicine	(1939) 81.6, 86.4, 91.6	81.1,
Harvard Medical School	(1938)	86.7
Creighton University School of Medicine	(1936)	81.7

School	LICENSED BY RECIPROCITY Year Grad.	Reciprocity with
Howard University College of Medicine	(1925)	Penna.
Emory University School of Medicine	(1936)	N. Carolina
University of Louisville School of Medicine	(1927)	Kentucky
Tulane University of Louisiana School of Medicine	(1931), (1935) Louisiana, (1934) Alabama	
Hahnemann Medical College and Hospital of Philadelphia	(1937)	New Jersey
University of Tennessee College of Medicine	(1923) (1937) Tennessee	Alabama,
Vanderbilt University School of Medicine	(1915), (1933)	Tennessee

School	LICENSED BY ENDORSEMENT Year Grad.	Endorsement of
Howard University College of Medicine	(1932)	N. B. M. Ex.
Northwestern University Medical School	(1934)	N. B. M. Ex.
Cornell University Medical College	(1933)	N. B. M. Ex.
Duke University School of Medicine	(1937)	N. B. M. Ex.
University of Pennsylvania School of Medicine	(1933)	N. B. M. Ex.

* These applicants completed four years' medical work and will receive an M.D. degree on completion of internship.

Arkansas November Examination

Dr. D. L. Owens, secretary, State Medical Board of the Arkansas Medical Society, reports the written examination held at Little Rock, Nov. 9-10, 1939. The examination covered twelve subjects. An average of 75 per cent was required to pass. Two candidates were examined, all of whom passed. The following schools were represented:

School	PASSED Year Grad.	Per Cent
University of Arkansas School of Medicine	(1939)	87.1
The School of Medicine of the Division of the Biological Sciences	(1939)	90

Seven physicians were licensed by reciprocity and one physician was licensed by endorsement from July 25 through December 26. The following schools were represented:

School	LICENSED BY RECIPROCITY Year Grad.	Reciprocity with
University of Arkansas School of Medicine	(1930)	Mississippi
University of Georgia Medical Department	(1924)	New York
State University of Iowa College of Medicine	(1933), (1936)	Iowa
Jefferson Medical College of Philadelphia	(1922)	Missouri
University of Tennessee College of Medicine	(1937)	Tennessee
Meharry Medical College	(1931)	Tennessee

School	LICENSED BY ENDORSEMENT Year Grad.	Endorsement of
Meharry Medical College	(1931)	N. B. M. Ex.

Book Notices

Sterility and Impaired Fertility: Pathogenesis, Diagnosis and Treatment. By Cedric Lane-Roberts, M.S., F.R.C.S., F.R.C.O.G., Gynæcologieal Surgeon, Royal Northern Hospital, London, Albert Sharman, M.D., M.R.C.O.G., Assistant Surgeon, Royal Samaritan Hospital for Women, Glasgow, Kenneth Walker, F.R.C.S., Surgeon to the Genito-Urinary Department, Royal Northern Hospital, London, and B. P. Wiesner, D.Sc., Ph.D., F.R.S.E., Consulting Biologist, Royal Northern Hospital, London. With a foreword by The Rt. Hon. Lord Horder, G.C.V.O., M.D., F.R.C.P. Cloth. Price, $5.50. Pp. 419, with 90 illustrations. New York: Paul B. Hoeber, Inc., 1939.

The field of sterility has become so extensive that it now requires a group of workers to deal adequately with all its various aspects. This condition is fulfilled in the present volume, which is the joint production of two gynecologists, a urologist and a biologist, each well known for his valuable contributions to the subject. Their book is complete and authoritative. It discusses thoroughly the modern views on the causation of infertility, with a critical analysis of the supporting evidence. Every recognized method of diagnosis and treatment receives attention. In some instances the weighting of these items does not accord with their practical importance; for example, while operations to remedy tubal occlusion are fully described, there is only the briefest mention of the surgical treatment of polycystic ovaries. The sections on endocrinology present an admirable summary of newer developments in that department of medicine, including not only theory but also practical application to problems of reproductive failure. The technic and interpretation of both endometrial and testicular biopsies are clearly explained. A good half of the total subject matter concerns itself with the male partner; in this is included a consideration of his responsibility in cases of habitual miscarriage. Throughout the book the authors maintain a commendable attitude of caution in their conclusions and of conservatism in their recommendations. The numerous illustrations are well chosen and beautifully executed. A series of appendixes dealing chiefly with technical laboratory procedures, a sufficient bibliography and a good working index complete the volume. The main feature of this book is its wealth of scientific detail, and one is led to wonder whether that very virtue may not overwhelm the ordinary practitioner who seeks primarily simple guidance in clinical procedure. The specialist, on the other hand, will welcome a treatise which is the last word to date on normal and abnormal human reproductive physiology.

Symposium on the Synapse. By Herbert S. Gasser and others. Reprinted from Journal of Neurophysiology, 1939, 2. Paper. Price, $1.50. Pp. 361-474, with 25 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, Publisher, 1939.

This classic of neurophysiology represents the present conceptions of synaptic conduction. It is invaluable and should be carefully studied. Gasser considers the axon as a sample of nervous tissue and qualitatively, therefore, as casting light on the physiology of synapse. This is achieved through the experimental demonstration of subnormal excitability in the axon as well as other parts of the neuron following single spikes or trains of spikes. This phenomenon renders the later discussion of inhibition and facilitation more understandable.

Erlanger then considers the question of differences between nerve fiber and synapse conduction. With the aid of information obtained by stimulation and polarization of the axon and studying such phenomena as latency, one way transmission, repetition, temporal summation, facilitation, and transmission of the action potential across a nonconducting gap, he is able to demonstrate "a temporal relation between subthreshold effect of a shock applied to a fiber, the subthreshold effect of an action potential beyond a block at a node and the subthreshold effect of an action potential blocked at a neuromuscular junction by curare." On the evidence presented he feels that transmission of the impulse across a synapse depends entirely on the influence exerted by the potential difference on the excitability and does not depend on substances released at the nerve ending.

Bronk passes from analogous behavior studies of axons to the study of sympathetic ganglions as samples of synaptic mechanisms. He attempts to correlate the electrical characteristics with the interesting excitatory effects of acetylcholine and potassium ions on the postganglionic fibers of sympathetic ganglions. While it is not desired to make a definite statement on the basis of available evidence, a definite scheme favors the dualistic theory of excitation at the synapse. His primary thesis, based on both the electrical and the chemical evidence, is that of a dynamic synapse undergoing a continuous change of state modified by numerous factors.

De No, by virtue of a detailed and ingenious study of the internuncial neurons lying between sensory nerves and motor nuclei of the medulla, and also by the method of electrical stimulation and pick-up and by a modification of the experiments of Wedensky, tends to an essentially electrical interpretation of conduction at the synapse. He says that "the action currents of nerve impulses arriving at the synapses may prove not to be the agents for synaptic transmission but everything happens as if they were." The cocaine nerve block experiment of Wedensky is enlarged, studied in detail and set up as a model of synaptic transmission with possibilities as fascinating as those of the iron wire model of Lillie.

Forbes completes the monograph with a summary of the more recent developments of the humoral aspect of synaptic transmission and emphasizes the great number of unanswered questions about the relative importance of each of the factors demonstrably concerned in the physiology of the synapse. Chemical versus electrical excitation at the synapse is still not a solved problem.

L'électro-encéphalogramme, normal et pathologique. Par Ivan Bertrand, directeur à l'Ecole des hautes études, Jean Delay, médecin des hôpitaux de Paris, et Jacqueline Guillain, assistante à l'Institut de neurobiologie. Paper. Price, 90 francs. Pp. 293, with 94 illustrations. Paris: Masson & Cie, 1939.

In this first monograph on the electro-encephalogram an attempt is made to cover all aspects of the clinical phases of the subject. A historical chapter includes the demonstration of electric currents in animal brains by Caton in 1875 as well as the subsequent contributions made in Germany, England and America, the literature being briefly reviewed. This is followed by a technical discussion of the principles of amplification and recording adapted at once to the purposes of the biologist setting up a laboratory and to those of the general reader.

The physical character of the alpha rhythm is discussed, brief attention being paid to its origin as argued by Adrian and by Berger. The physical characteristics of the beta rhythm, less well known, are given corresponding cursory treatment. Mention of delta waves completes the formal description. The phylogenic differences in rhythms, the development of the regular ten per second adult rhythm from the slow irregular patterns of infancy, individual differences, modes of classification and criteria of "normal" are completely represented.

Normal and pathologic types of sensory activity are presented in visual, auditory, cutaneous, gustatory, olfactory and proprioceptive studies of the animal brain. The studies of the effects of visual, auditory and tactile stimuli on the alpha rhythm of man, while completely represented, indicate the infancy of this phase of the subject. Pathologic conditions such as hemianopia, hallucinations induced by mescaline and hypnosis, and finally a differential test for hysterical anesthesias are presented.

Included under considerations of normal and pathologic psychic activity as represented in the electro-encephalogram is a discussion of the accepted "stages of normal sleep." The differential effect of the anesthetic gases and barbiturate sedation on the cortical rhythm during the induction of sleep is striking in that the barbiturates induce a more "normal" type of sleep waves. Comas and torpors of various sorts are attended by slow delta waves. Narcolepsy and prolonged hypnosis are attended, on the other hand, by diminution of the alpha rhythm. That the phenomena appearing in sleep may be duplicated by cortical differentiation is demonstrated by Bremer's experiments with the "isolated brain" technic.

Psychiatric considerations concern mental retardation, wherein only idiocy is characterized by slow irregular patterns while imbecility and mental defect have more nearly normal patterns. Myxedema and dementia paralytica are given detailed description, and finally the inconstant features of schizophrenia and their modification by insulin and metrazol therapy in the direction of enhancing the usually weak alpha rhythm are discussed.

Normal and pathologic motor activity include correlations of frequency of finger tremor and precentral rhythms and differentiation of occipital and precentral alphas. Some consideration is given to the rapid cerebellar rhythm and to cerebellocerebral relationships. The well established patterns of grand and petit mal and the current American concept of epilepsy as a paroxysmal cerebral dysrhythmia are well presented. The inconstant features of parkinsonism are less well known and are presented as an open problem.

Included in the section on localizing the value of the electroencephalogram is a discussion of correlations of precentral betas and occipital alphas with their respective sensory representations in cutaneous and visual spheres. The sharp correlation of electrical fields with cyto-architectonic ones in the animal and the more diffuse nature of this phenomenon in man are shown. Instruction in the use of the instrument for localization of cortical lesions such as tumors is amply given by the use of case material.

Two final chapters on experimental alteration of the cortical rhythms by ischemia, asphyxia, chemicals, p_H change differentiation by the Bremer technic and considerations of the general question of neuronal automatism and synchrony conclude this readable summary of the subject of clinical electro-encephalography.

Treatment of Some Common Diseases (Medical and Surgical). By Various Authors. Edited by T. Rowland Hill, M.D., M.R.C.P., Physician to the Southend General Hospital, London. Cloth. Price, $5. Pp. 398, with 90 illustrations. Baltimore: William Wood & Company, 1939.

The twenty-one authors of this book are not perhaps among those British practitioners whose names are best known in American medical circles nor is the Southend General Hospital of which they are staff members particularly famed on our side of the Atlantic; it is therefore quite enjoyable to welcome from this group and hospital a pleasing little book. The twenty-six subjects covered seem, to be sure, to have been chosen quite at random, as though each man had simply elected to write on a topic in which he was much interested, but the style is on the whole quite pleasing and the book certainly fulfils the editor's wish that it be looked on merely as a small volume to be taken down and read from time to time by practitioner and student.

The subjects included are angina pectoris, heart failure, pleurisy, bronchopulmonary suppuration, anemia, cerebral vascular disease, digestive disorders of infancy and childhood, prophylactic treatment by active immunization, malignant disease of the pharynx, obstructive jaundice due to malignant disease, hemorrhage from the intestinal tract, enlargement of the prostate gland, infections of the face and neck, suppurative lesions about the knee joint, head injury and its complications, uterine hemorrhage, delay in labor, shock during anesthesia, preanesthetic medication, x-rays in the treatment of malignant disease, injuries to the skin and mucous membrane in radiation therapy, moles, warts and angiomas, ocular complications of some common disorders of the skin, earache, dental caries and postoperative wound complications. There are numerous good photographic reproductions both of x-ray films and of facies, a number of line drawings and charts, and several color plates. The index seems adequate but there is no bibliography, which is perhaps not a serious omission in this type of book.

Eye, Ear, Nose and Throat Manual for Nurses. By Roy H. Parkinson, M.D., F.A.C.S., Head Oculist and Aurist to St. Joseph's Hospital, San Francisco, California. Fourth edition. Cloth. Price, $2.25. Pp. 243, with 79 illustrations. St. Louis: C. V. Mosby Company, 1939.

In a competent fashion the author discusses the anatomy of the eye, ear, nose and throat. He devotes a great deal of attention to the common diseases of these regions. At the end of the various chapters are questions relating to the material covered. The proper knowledge of the answers presumably would mean that the student nurse had a good understanding of the various details discussed in the text. There follows then the discussion of the care and treatment of eye, ear, nose and throat conditions and finally the technic of assisting the surgeon in these regions. This part is particularly valuable. Reproductions of photographs show the instruments which are used, which should be of great value to supervisors and senior nurses as well as informative for the younger group. In the hands of those who devote time to the teaching of nurses a manual of this character should be of great value.

Klinische Chemie und Mikroskopie: Ausgewählte Untersuchungsmethoden für das medizinisch-chemische Laboratorium. Von Dr. Lothar Hallmann, Direktor der biochemischen und bakteriologischen Abteilung des städtischen Kaiser-Friedrich- und Kaiserin-Friedrich-Kinderkrankenhauses in Berlin. Paper. Price, 12 marks. Pp. 387, with 113 illustrations. Leipzig: Georg Thieme, 1939.

This is an excellent little book on clinical chemistry and microscopy. It is divided into three parts: general laboratory technics, qualitative, physical and general investigations, and quantitative micro methods. Introductory remarks relate to the handling of glassware, weighing, making the solutions, reagents and bacterial stains. This part is well done. The first chapter deals with investigation of sputum, stomach contents and duodenal juices. The second chapter relates to general investigations of intestinal contents, chemical and microscopic. There are fifteen pages on parasites and protozoa. The third chapter deals with details of sputum analysis. The fourth chapter discusses exudates, transudates and cyst fluids. This is only two and a half pages and necessarily is exceedingly brief. The fifth chapter relates to investigations of urine and covers ninety-one pages. It is abreast of the time but rather superficial. The sixth chapter discusses spinal fluid, sixteen pages in all. It gives details of the Heller, Weichbrodt, Nonne-Apelt, Pawlowitsch, Pandy and Lange tests, the mastic reaction, the normomastic reaction of Kafka, the lumbotest of Emanuel, a quantitative albumin test of Kafka, the Takata-Ara reaction, the tryptophan reaction of Voisinet, the chemical test for sugar, the hemolysin test of Weil and Kafka and the vitamin C test. The method for counting cells is that utilizing the well known Fuchs-Rosenthal counting chamber and the Jessen counting chamber. The seventh chapter discusses blood; this consists of 187 pages and is a good chapter. The eighth chapter discusses quantitative chemical investigations of body fluids, which are mostly micro methods. This is a valuable brief or outline of clinical chemical procedures. To use a continental expression, it is a good vade mecum. There is an excellent table of medicochemical terms and a table devoted to the appearances in various diseases. So far as references to the literature are concerned, there is a table of references to the literature of blood chemistry covering six printed pages. It is noteworthy that among these references there are but twenty references to American articles, which is a typical German method of ignoring our literature.

British Health Resorts. Spa, Seaside, Inland, Including Those of the British Dominions and Colonies. With Chapters on the Science of Waters and Baths, the Climates of the Coast and the "Invalids' Winter." Edited for the Association by R. Fortescue Fox, M.D., F.R.C.P., F.R.Met.S. Assisted by Wyndham E. B. Lloyd, M.R.C.S., L.R.C.P., D.P.H. With a foreword by the Rt. Hon. Walter Elliot, Minister of Health. Official Handbook of the British Health Resorts Association. Paper. Price, 2s. 6d. Pp. 317, with illustrations. London: The Association, 1939.

In the foreword the minister of health stresses the importance of health resorts in the national fitness campaign. He points out that the recent extension of holidays with pay makes the health resorts of inestimable value. The chapters on the scientific basis of medical practice at the spas and the coast have been rewritten. Also the analysis of the regional climates has been amplified with new data. The editor has presented a simple classification of mineral waters and has agreeably omitted all claims for the specificity of any particular water for any particular condition. He points out the fact that the selection of the proper spa for treatment depends to a considerable degree on the constitution of the patient as well as on his particular disease. This emphasizes again the important fact that spa therapy is effective through its influence on disordered bodily function rather than being a specific for the disease. In the report of the medical advisory committee, the concise and clearly stated work and place of spas in promoting and maintaining health and preventing disease is emphasized. The ministry of health is urged to act in this field by inspection and recognition of the spas. The section on spas provides condensed information for the physician which has been approved by the medical advisory committee of the association regarding location, climate, the waters, the treatments, the indications and entertainment features. A notable omission is information regarding the physicians in practice at each spa. Information regarding living accommodations is provided in a separate section made up of the advertisements of the various hotels. The importance of studying the factors of climate such as pressure, temperature, wind, light, humidity, sunshine, precipitation and electricity as

they influence or produce the bracing tonic or relaxing sedative climate is clearly emphasized. The section of seaside resorts of the British Isles lists information regarding their location, climate, sea bathing, indications and attractions. Their hotels are listed in the special section.

Obstetrical Manikin Practice. By Lyle G. McNeile, M.D., Professor of Obstetrics and Gynecology, University of Southern California School of Medicine, Los Angeles. Cloth. Price, $2. Pp. 111, with 38 illustrations. Baltimore: William Wood & Company, 1939.

This little manual is well done and serves to replace the use of the larger textbooks in the manikin classroom. The book amounts to an outline of operative obstetrics and as such should prove valuable to the student, advanced or beginning. The only objection that can be raised to this volume is that it can be considered inadequately illustrated. Such a book has long been needed as an addition to the American literature, and McNeile has made an excellent beginning. No doubt the needed revisions will be made in future editions. This book can be recommended to the serious student of obstetrics.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Copyright: Excerpt from Medical Book Used for Commercial Purposes.—One of the plaintiffs, referred to by the court as the "use-plaintiff," was the author of a book on the human voice which was copyrighted by the publishers. After the publication of the book, the defendant tobacco company published and widely circulated a pamphlet entitled "Some Facts About Cigarettes," in which under the heading "Do cigarettes affect the throat?" appeared quotations attributed to the author and which in fact were copied, although not exactly, from matter appearing in the book on the human voice. The publishers of the book, "to the use of" the author, filed a complaint in the United States district court, eastern district, Pennsylvania, against the defendant tobacco company, charging copyright infringement.

The complaint averred that the use of the excerpt from the book in advertising matter of the nature under consideration cast reflections on the professional ethics of the author and brought down on him the term "commercialist," all of which contributed to negative and deter the sale of the book. The complaint further alleged that the defendant had realized large profits and advantages from the infringement and that it was prepared to continue the acts complained of, unless restrained. The defendant moved to dismiss the bill, urging that the copied matter was negligible in quantity, that its literary or scientific content was insignificant and that the copying did not exceed a fair use of a scientific treatise, due acknowledgment having been made to the author.

In order to constitute an infringement of the copyright of a book, said the court, it is not necessary that the whole or even a large portion of the book shall have been copied. Furthermore, the reproduction need not be literal and exact; it is piracy if it appears that the copyrighted work has been copied, although altered or paraphrased. The three sentences from the book that were used by the defendant, while constituting but a small part of the book, represented those portions of it which were pertinent to the subject of the defendant's pamphlet. Furthermore, the matter that was reproduced from the book constituted about one twentieth of the pamphlet. Under these circumstances, the court could not say that the matter used by the defendant was so unsubstantial as to afford no remedy.

The fact that the defendant acknowledged the source from which the matter was taken did not excuse the infringement. While the acknowledgment indicated that the company did not intend unfair competition, it did not relieve the defendant from legal liability for the infringement.

The infringement complained of was not excusable on the ground that the defendant was making no more than a fair use of the author's work. It is true that the law permits those working in a field of science or art to make use of ideas, opinions or theories, and in certain cases even the exact words contained in a copyrighted book in that field. This is permitted in order "that the world may not be deprived of improvements, nor the progress of the arts be retarded." In such cases, the law implies the consent of the copyright owner to a fair use of his publication for the advancement of the science or art. This principle, however, had no application in this case. The pamphlet was a publication not in the field in which the author wrote, nor was it a scientific treatise or a work designed to advance human knowledge; it was intended to advance the sale of the defendant's product, a purely commercial purpose, and there arose no implication that the author consented to the use of his work for such a purpose.

Finally, the defendant urged that the action was improperly brought in the name of the publishers "to the use of" the author. In the opinion of the court, this point was well taken, for there is no such thing as "suing to the use" in equity, Here, the author of the book for whose benefit the publishers acquired a copyright was entitled to maintain the suit in equity in his own name. The improper joinder of the publishers as plaintiff was, however, the court said, amendable, and the plaintiffs were accorded leave to amend the bill by eliminating the publishers as a party plaintiff. Counsel for the plaintiffs also requested leave to amend the bill so as to introduce a cause of action arising out of the alleged violation of the author's right of privacy by the defendant's pamphlet. Without passing on the question whether or not such a right exists, the court found difficulty in understanding how the copying of a book which the author had published to the public could be held to be an invasion of his privacy. Such a right, however, the court pointed out, if it existed, involved an entirely new and essentially different cause of action based on an entirely different ground of jurisdiction. This new cause of action, the court said, could not be introduced into the present copyright action under the guise of an amendment to the complaint.

The court, therefore, refused the motion to dismiss the bill of complaint on condition that the bill be amended by eliminating the publishers as a party plaintiff.—*Henry Holt & Co., Inc., to Use of Felderman v. Liggett & Myers Tobacco Co. (Pa.), 23 F. Supp. 302.*

Workmen's Compensation Acts: Lead Poisoning as Accidental Injury.—The principle issue involved in this case was whether the death of the employee from lead poisoning resulted from accidental injuries received within the scope of his employment, and hence compensable under the workmen's compensation act of Texas, or whether the lead poisoning constituted an occupational disease for which no compensation was provided by the act. The district court granted compensation, after having charged the jury that an occupational disease is one acquired in the usual and ordinary course of an employment, which disease, from common experience, is recognized to be incidental thereto and is the usual and ordinary result incident to the pursuit of an occupation and must, in the nature of things, be the result of a slow and gradual development. The insurer appealed to the court of civil appeals of Texas, Galveston.

For more than five years prior to his death the employee had been employed by an iron and steel company where he was exposed to fumes and poisonous gases arising from melted lead. On May 15, 1936, the employee inhaled an unusually large quantity of poisonous lead fumes. On the morning of that day he appeared for work in an apparently normal and healthy condition. His helper testified that the masks furnished by the company to protect employees from the lead fumes were old and were not effective and that at the time the employee became ill the fumes were so bad that he coughed and choked and complained that he could not stand the fumes any longer. The employee became gradually worse and died May 30. The family physician of the employee testified that on several occasions in March 1936 he treated the employee for lead colic and that he treated him again on May 20 for acute lead poisoning and that the cause of the death was acute lead poisoning. This testimony, the court said, showed that at a definite time and place the employee was subjected to an unusual volume of poisonous lead fumes which might have been prevented by furnishing to the employees of the company masks which would have protected them against the fumes. In view of the definition of an occupa-

tional disease given to the jury by the trial court, which the appellate court inferentially approved, it was the opinion of the latter court that the employee died from accidental injuries, not from an occupational disease.

The employer contended that the trial court erred in refusing to instruct the jury to find whether or not the employee's death was due to an accident. In the case of *Associated Indemnity Corporation* v. *Baker*, 76 S. W. (2d) 153, a similar contention was made and the court said:

> This was not error. It was shown that the injuries received on that day were the result of inhaling poisonous fumes and gases from the condenser. It was further shown that no other employee in the performance of the same duty had suffered any injury prior to that time. A finding that his injuries were the result of inhaling the fumes is tantamount to a finding that they were the result of an accident.

The judgment of the trial court in the present case, awarding compensation, was affirmed.—*Casualty Underwriters v. Flores (Texas), 125 S. W. (2d) 371.*

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Louisville, Ky., Mar. 20-22. Dr. E. R. Clark, Dept. of Anatomy, Univ. of Pennsylvania School of Medicine, Philadelphia, Secretary.

American Association of Pathologists and Bacteriologists, Pittsburgh, Mar. 21-22. Dr. Howard T. Karsner, 2085 Adelbert Rd., Cleveland, Secretary.

American College of Physicians, Cleveland, Apr. 1-5. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.

American Orthopsychiatric Association, Boston, Feb. 22-24. Dr. Norvelle C. La Mar, 149 East 73d St., New York, Secretary.

American Physiological Society, New Orleans, March 13-16. Dr. Philip Bard, Johns Hopkins Medical School, Baltimore, Secretary.

American Society for Experimental Pathology, New Orleans, March 13-16. Dr. Paul R. Cannon, Dept. of Pathology, University of Chicago, Chicago, Secretary.

American Society for Pharmacology and Experimental Therapeutics, New Orleans, March 13-16. Dr. G. Philip Grabfield, 319 Longwood Ave., Boston, Secretary.

Annual Congress on Medical Education and Licensure, Chicago, Feb. 12-13. Dr. W. D. Cutter, 535 North Dearborn St., Chicago, Secretary.

Federation of American Societies for Experimental Biology, New Orleans, Mar. 13-16. Dr. D. R. Hooker, 19 West Chase St., Baltimore, Secretary.

Mid-South Post-Graduate Medical Assembly, Memphis, Tenn., Feb. 13-16. Dr. A. F. Cooper, Goodwyn Institute Bldg., Memphis, Tenn., Secretary.

Pacific Coast Surgical Association, Portland, Ore., Apr. 3-6. Dr. H. Glen Bell, University of California Hospital, San Francisco, Secretary.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Twelfth Annual Meeting, Held in Chicago, Nov. 3 and 4, 1939

(Continued from page 440)

Influence of Various Substances (Including Lipocaic and Choline) on Fatty Livers Produced by Scorbutogenic Diets

DRS. M. A. SPELLBERG and R. W. KEETON, Chicago: Twenty-five of twenty-seven guinea pigs rendered scorbutic by the Sherman-LaMer-Campbell scorbutogenic diet showed morphologic evidence of moderate to severe fatty degeneration of the liver. Five of these livers, analyzed for total lipids by the Van Slyke monometric method, contained between 11 and 26 per cent of fat. When this diet was enriched by the addition of dextrose and desiccated yeast, the analysis of the livers of six animals showed a fat content of from 4.5 to 12.5 per cent. The normal livers had a fat content of about 2 per cent. That the lack of ascorbic acid is not the sole responsible factor of the pathologic change in the liver was proved by the additional experiment giving adequate amounts of this vitamin to the diets described (ten animals). In the animals on this regimen also fatty livers developed, containing up to 33 per cent of fat. Death was frequently precipitated by a pulmonary infection. Orange juice was no more effective in preventing these fatty livers than pure ascorbic acid, but the animals receiving the fruit juice as a supplement seemed to survive somewhat longer. The only animal that survived more than five months showed cirrhosis of the liver on postmortem examinations.

The lipotropic effect of choline and lipocaic were tested on ten animals. The choline was given as the hydrochloride, 20 mg. daily to each animal. The dose of lipocaic was about 475 mg. daily. Both of these doses are considered adequate for exerting a lipotropic effect. Neither of these substances produced a significant reduction in liver fat. The animals receiving lipocaic showed a liver lipid content of from 9 to 22 per cent, while those on choline showed from 7 to 20 per cent of fat. These values are not significantly below those of the controls.

In addition to adding another approach to the study of liver pathology our experiments suggest that the absence of an unknown or little understood substance in these diets is responsible for these liver changes and that this type of fatty liver is influenced by neither choline nor lipocaic.

DISCUSSION

DR. LESTER R. DRAGSTEDT, Chicago: The gross and microscopic appearance of the liver in the experiments of Drs. Spellberg and Keeton resemble closely the fatty infiltration in the liver which occurs in the depancreatized dog treated with insulin. This latter type of fatty infiltration can be prevented or cured by the oral administration of adequate amounts of fresh pancreas or lipocaic. We have tested the fraction of lipocaic used by Dr. Spellberg and found it to be effective in relieving fatty infiltration of the liver in the depancreatized dog in a dose of from 2 to 2.5 Gm. of dry substance daily. Accordingly it would seem that the smaller amount given by Dr. Spellman should be effective in a guinea pig. We are not sure, however, that the dosage of lipocaic bears a direct relation to the body weight, and for this reason I should like to see the authors repeat the experiment with larger amounts of lipocaic. Whatever may be found with respect to the relation of lipocaic to this type of fatty infiltration in the liver, the observation does not affect the status of lipocaic as an internal secretion of the pancreas. I should like to emphasize this because in the early part of our work some criticism was voiced on the basis of experiments performed on a type of dietary fatty liver produced in normal rats. I will summarize briefly the evidence which makes us believe that lipocaic is a specific internal secretion of the pancreas. 1. The depancreatized dog fed on a mixed diet of protein, carbohydrate and fat is not restored to a normal state by the adequate administration of insulin but exhibits a specific type of disturbance in fat metabolism and commonly dies within three or four months with extensive fatty infiltration of the liver. 2. This disturbance in fat utilization is corrected by the oral administration of pancreas. 3. The beneficial effect of pancreas in this connection is not due to its content of pancreatic enzymes, since fresh active pancreatic juice was found to have no such beneficial effect. 4. The beneficial effect of pancreas cannot be accounted for on the basis of its content of lecithin and choline, since liver and brain, which contain these substances in even greater amounts, exhibit no such beneficial effect. Furthermore, the amount of choline required to produce an equivalent beneficial effect in the depancreatized dog is approximately ten times as great as the amount of choline present in an adequate dose of pancreas. 5. When extracts of pancreas are prepared, the fraction soluble in ether, which contains the fat of the pancreas and practically all of the choline, is found to be inert whereas the fat-free alcohol extract retains the activity of the whole gland. The fat-free alcohol extract has now been sufficiently purified so that a preparation has been secured that is effective on oral and subcutaneous administration in daily doses of from 60 to 100 mg. of dry substance. These extracts contain no lecithin and only insignificant amounts of free choline.

DR. M. HERBERT BARKER, Chicago: Some six years ago I presented slides and work which appeared much like these given today. Those experiments are interesting today because here again another deficiency comes out as marked fatty infiltration. I was interested in seeing the apparent fibrosis of the liver. In our experience there was no fibrotic change that we could see. If the animal was fed nitrogen his liver recovered. Sections of livers of animals before treatment was started revealed high concentrations of fat, and many of them had extensive fibrotic change. I would like to hear comment on the nature and rate of progression of this fibrosis.

Dr. Paul Starr, Chicago: Were there pathologic changes in the pancreas in these animals?

Dr. M. A. Spellberg, Chicago: This study was not undertaken with the idea of proving or disproving the efficacy of lipocaic as a lipotropic agent. Our aim was to ascertain whether lipocaic or choline had any influence on the type of fatty liver produced by us. So far as the dosage is concerned we felt that in view of the opinion expressed in one of Dr. Dragstedt's earlier papers (Dragstedt, L. R.; Prohaska, J. V., and Harms, H. P.: *Am. J. Physiol.* **117**:175 [Sept.] 1936) from 1 to 1.5 Gm. of this extract is sufficient to prevent fatty liver in a dog whose body weight is twenty times or more that of our guinea pigs, approximately 0.5 Gm. used on our animals would seem sufficient. The use of larger amounts would encounter some technical difficulties. We administered the material in aqueous solution with a syringe by mouth. This had to be done forcibly. There was only one guinea pig that had extensive fibrosis, which was true cirrhosis with ascites and edema. This animal survived 154 days. We had only a few others that lived that long, but in the others no fibrosis was detected. It is difficult to keep these animals alive for a long period because they succumbed easily to secondary infection. The rabbit that was permitted to live 142 days did show microscopically increased fibrous tissue in the liver. This animal may prove to be better fitted for the production of fibrosis than the guinea pig. These diets are not deficient in proteins, carbohydrates or fats and are supposed to contain all the accessory food factors except ascorbic acid. The pancreas was normal to gross inspection. The urine was tested a number of times and no glycosuria detected. We have no reason to believe that the pancreas was damaged.

Absence of Toxic Manifestations Following the Parenteral Administration of Promin

Dr. Richard M. Johnson, Eloise, Mich.: The oral administration of promin nearly always results in a moderately severe cyanosis similar to that commonly observed after giving sulfanilamide. Oral ingestion of 25 to 35 mg. of promin (sodium p,p'-diaminodiphenylsulfone-N,N'-di-dextrose sulfonate) per kilogram of body weight each twenty-four hours often resulted in toxic manifestations similar to, but milder than, those reported after large doses of sulfanilamide. The parenteral injection of as much as 300 mg. per kilogram of body weight in twenty-four hours did not lead to the development of cyanosis and did not produce toxic signs or symptoms of any kind in 274 patients given more than 5,000 injections of over 12,000 Gm. The usual parenteral dosage was from 50 to 100 mg. per kilogram of body weight in twenty-four hours.

After oral and parenteral administration, the amount of promin in the blood, spinal fluid, saliva, exudates, transudates and urinary excretion was determined by a modification of Marshall's method for the determination of sulfanilamide. The concentration of promin in these secretions, exudates and transudates closely approximated that present in the blood stream. When promin was administered parenterally, from 95 to 100 per cent was recovered as free promin in the urine from thirty-six to forty-eight hours after administration. A much smaller amount (about 30 per cent) of orally administered promin was recoverable over a more prolonged period (ninety-six hours), and 20 per cent of this recoverable promin was in the conjugated form. This suggests that the substance or substances which produce the cyanosis, toxic manifestations and conjugation may be formed in the gastrointestinal tract.

Dextrose-Citrate Mixture for Preservation of Blood for Transfusion

Elmer L. DeGowin, M.D., John E. Harris, M.S., and E. D. Plass, M.D., Iowa City: Rates of hemolysis in samples of human blood preserved in various mixtures at 5 C. for one month were studied. Minimum hemolysis occurred in mixtures containing 10 volumes of blood, 13 volumes of 5.4 per cent anhydrous dextrose in water and 2 volumes of 3.2 per cent dihydric sodium citrate in water. At the end of a month's storage, blood in the dextrose-citrate mixture had hemolyzed only from one twenty-fifth to one fiftieth as much as did blood in citrate solutions alone or in citrate-saline mixtures. During storage the potassium of the erythrocytes diffused into the plasma, where it attained maximum concentration in about fifteen days. Transfusions into human beings of blood with maximum plasma potassium were accompanied by no clinical, chemical or electrocardiographic evidence of toxicity. The prothrombin disintegrated slowly, remaining above 50 per cent of normal at the end of twenty days' storage when titrated by the method of Smith, Warner and Brinkhous.

DISCUSSION

Dr. O. H. Robertson, Chicago: I consider this work timely because of the war in Europe, which may at any moment result in large casualties. In such an event blood transfusions will be employed extensively. During the last war I had the opportunity to try out preserved blood for transfusion using the technic of Rous and Turner, who were the first to devise an effective method for preserving the red blood cells for relatively long periods. Before giving the blood it was necessary to siphon off the supernatant fluid on account of its large bulk and the amount of contained sodium citrate. The sedimented cells were then resuspended in a solution of 2.5 per cent gelatin in physiologic solution of sodium chloride equivalent in volume to the original plasma. This solution has about the osmotic pressure of normal blood plasma. Transfusions with such blood seemed to be just as effective as with fresh citrated blood, and I used blood stored twenty-six days with apparent good results. Requirements for transfusions under war conditions are different from those in times of peace. Wounded men who need transfusion are frequently in a state of shock either with or without hemorrhage, and one must give them solutions that will not escape from the blood vessels since the prime consideration in the treatment of shock is the restoration of the blood volume. The one advantage of simple citration for the preservation of blood lies in the fact that the plasma proteins undergo but little dilution. However, the usefulness of this method is much restricted, since citrated blood begins to hemolyze after ten days. Dr. DeGowin's modification of the Rous-Turner method has removed one of the difficulties in the dextrose-citrate technic, namely that of the bulk and citrate content of the preserving fluid. His data show that the transfusion of the whole mixture of cells and preserving fluid works excellently in conditions of depleted red blood cell volume, but I wish to bring up the question as to how effective this diluted plasma would be in restoring the total blood volume in patients suffering from shock. This point is important in the general applicability of the method. I wonder if the authors have made any observations on the restoration and maintenance of blood volume in conditions of shock after transfusion with this kind of blood.

Dr. Warren B. Cooksey, Detroit: The considerations that one is primarily interested in are the practical values of this work. I am sure the authors will agree that in the use of preserved blood the usual amount of hemolysis is of no great significance unless very large quantities of blood are given. Because of such studies, I set up our blood bank at Harper Hospital in Detroit on the basis of what I believe are the three major principles to be considered: First, small amounts of blood, frequently repeated if necessary, should give a wider margin of safety; so our blood bank uses only units of 250 cc. of blood and 50 cc. of 2.5 per cent citrate. Second, because of the problems presented by hemolysis, potassium ion diffusion and prothrombin loss, not too old blood should be used; so we convert all blood into useful plasma when it is seven days old. Hence most of our preserved blood is given when only from two to four days old. Third, the mechanical factors, such as an air-tight container and filtration through a fine mesh filter system, can be added safeguards; so such methods were devised. That these considerations seem justified is apparently borne out by the fact that following the administration of the first 700 bottles of blood from the bank only eight reactions occurred, and most of them were extremely mild.

Dr. Heinrich Necheles, Chicago: Drs. Levinson and Neuwelt and I have studied the possibility of using serum instead of blood transfusions. We have found that in shock

from hemorrhage, even when hemoglobin is low, the most immediate need is not for red cells but for restoration of circulatory volume. Even when blood loss is so great that red cells are needed, immediate transfusion of serum will keep a patient alive until a transfusion with blood has been prepared. Serum is available immediately; it can be put up in sterile containers and may be kept for long periods (eighteen months). It is given without typing, because when pooled serum is injected the agglutinins are neutralized; it need not be kept cold and can be transported easily. In view of the great delay connected with blood transfusions in hospitals without blood banks, as well as at the battle front, we propose the immediate use of serum instead of blood in cases of shock from hemorrhage.

DR. ELIZABETH H. SCHIRMER, Chicago: May I ask whether the authors find that the shape of the flask has any influence on the hemolysis of the red cells?

DR. ELMER L. DEGOWIN, Iowa City: In preserved blood one is always dealing with hemolyzed blood. Hemolysis begins immediately with storage; it does not begin when the blood is shaken, nor is there a hemolysis-free interval of days or weeks. The suitability of this blood for transfusion depends on how much free hemoglobin the recipient will tolerate without danger. The only data available are those of Ottenberg and Fox by which they showed that the human kidney has a threshold for hemoglobin of around 4 or 5 Gm. To answer Dr. Robertson, we have not made any studies on the dilution of serum proteins with reference to shock. We have given the blood-dextrose-citrate mixture to patients in shock and they have recovered satisfactorily. It is assumed that the dextrose disappears from the serum much faster than does the protein, but there is no proof. The question has been brought up about the reaction from blood transfusions. There is a great deal of confusion about this, and the types of reactions must be specified. The causes of none of the types of reaction are known except those due to incompatible blood and those due to the presence of pyrogens. In answer to Dr. Schirmer, we have made no observations on the shape of the flask giving optimal conditions, but we do know that when blood is stored in a flask from which all the air is excluded by displacement with the preservative mixture there will be less hemolysis than when blood is exposed to the air.

Refractory Hemolytic Anemia

DRS. JOHN C. SHARPE and J. P. TOLLMAN, Omaha: From the large, ill defined group of blood dyscrasias termed "splenic" or "hemolytic" anemia, we have separated five cases which are distinctly different from both a clinical and a pathologic point of view. Two men and three women, whose ages varied from 22 to 63 years, had a progressive, subacute course of weakness and jaundice. In each a severe degree of macrocytic anemia, acholuric icterus, reticulocytosis and bone marrow hyperplasia was found. The irrelevant family history, the normal erythrocytic fragility and the absence of spherocytes distinguished this type from familial hemolytic jaundice. Various forms of medical treatment failed. Splenectomy was performed in each instance without improvement. Microscopic studies of the hemopoietic system disclosed a surprising histiocytic reaction within the spleen. The recognition of such a condition as a separate clinical entity is important from the prognostic and the therapeutic point of view.

DISCUSSION

DR. CHARLES A. DOAN, Columbus, Ohio: Analysis of the investigations of the past decade centering about the rationale of splenectomy in a hemolytic type of anemia would seem at present to place such persons in one of four possible etiologic categories: 1. There are patients with a family and personal history and with the physical and laboratory features characteristic of congenital hemolytic jaundice. Splenectomy of these patients, successfully accomplished, always results in a prompt and usually a permanent remission, irrespective of the preoperative chronicity or acuteness of the clinical manifestations, if all splenic tissue is removed. Such patients, however, have been found to harbor ectopic splenic tissue and to show multiple free accessory spleens more frequently and more extensively than the average normal person. 2. Therefore when recurrences develop in splenectomized patients with hemolytic anemia the tendency is for the physician to transfer his thinking toward other than the splenic mechanisms of hemolysis. A considerable proportion of these patients with recurrences, when subjected to reexploration, show hypertrophied splenic rests with clasmatocytic hyperplasia and excessive erythrocyte phagocytosis comparable to that seen in the original enlarged splenic parenchyma. The first patient successfully splenectomized during an acute hemoclastic crisis in our series of cases of hemolytic jaundice remained entirely well clinically and in normal hemopoietic equilibrium for four years. Then the hemolytic anemia recurred with a gradual but steadily progressive downhill course. When the red count reached 2,000,000, the abdomen was reopened and three small accessory spleens were removed. At the same time a liver biopsy was made and a mesenteric lymph node secured for microscopic study. Only the splenic tissue showed the typical hyperplasia of clasmatocytes with excessive phagocytosis of red cells. The second remission, which followed immediately, has continued until the present time (two years). 3. A third group of patients probably represent either widespread diffuse reticuloendotheliosis involving the Kupffer cells of the liver and macrophages of other organs and the connective tissues generally, or an invisible implantation of ectopic splenic tissue within other organs. These instances occur much less frequently than one might be led to expect, if it is assumed that all the phagocytic mesenchymal elements have a common origin and serve a common function. Elimination by excision, of course, is impossible under these circumstances, and other means and methods of inhibiting or destroying excessive red cell phagocytosis must be conceived and invoked. 4. Anemia due to endogenous or exogenous hemolysin may superficially resemble and occasionally simulate the congenital type of hemolytic jaundice. In one such case in our experience all splenic tissue found at operation was removed, but only an incomplete and transitory remission followed, and at necropsy it was not possible to explain the death on an anatomic basis. The cases reported by Drs. Sharpe and Tollman today would seem to come under the fourth heading. I should like to inquire whether any studies were made on any of the patients cited which would throw light on a possible soluble serum or plasma hemolysin as the basic cause. It is well to have our attention focused on this group of atypical hemolytic anemias which fail to respond to splenectomy and which vary in other essential details from the more classic type of congenital hemolytic icterus. It is quite apparent that they are due to an entirely different mechanism.

DR. S. M. GOLDHAMER, Ann Arbor, Mich.: I cannot understand the reason for calling the anemia macrocytic when I notice that the mean corpuscular volume was normal or below normal. Little is known about the function of the spleen. Its removal may aid the patient but does it alter the disease, as the fragility and the cells remain abnormal? I should like to ask the rationale of removal of the spleen without knowing the etiology of the disease.

DR. MOSES BARRON, Minneapolis: I should like to ask why all these cases were grouped together. The anemias were called macrocytic but it was stated that the cells were small and that definite leukopenia was present. From the description the cases seem to belong to a group which is generally classified as Banti's disease, and I should like to know why they were classified as hemolytic anemias. It was mentioned that they presented acholuric jaundice but it was stated that the patients all had gallstones. Was this true acholuric jaundice or was the jaundice perhaps due to the gallstones? I consider this group as cases of Banti's disease.

DR. M. M. HARGRAVES, Rochester, Minn.: I should like to ask if they had a history suggestive of paroxysmal hemoglobinuria. I have seen three in the past year and have one under my care at present. The histories were suggestive of paroxysmal hemoglobinuria.

DR. FRANK H. BETHELL, Ann Arbor, Mich.: I am interested in the histiocytic reaction observed in the spleens in these cases. Perhaps this reaction was disseminated; I should like to know if an increase in histiocytes was found in the

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bone marrow specimens. If so, the hemolysis in these cases might be due to neoplastic proliferation of phagocytic reticuloendothelial cells.

DR. JOHN C. SHARPE, Omaha: There was no evidence of any accessory spleen or hemolymph nodes present either at operation or at the complete postmortem examinations in the three fatal cases. Dr. Goldhamer asked our rationale for removal of the spleen. Splenectomy was performed only after every other effort had been made to stop the hemolytic process. With regard to the macrocytosis, the average mean corpuscular volume of 110 cubic microns in these cases is definitely above that seen in normal persons in Omaha. Dr. Barron asked whether or not these were cases of Banti's disease. There was certainly no postmortem evidence of this. In answer to Dr. Hargrove's question concerning the presence of paroxysmal hemoglobinuria, we could obtain no history of such a phenomenon nor were there any signs pointing to it at the time of our contacts with the patients. Dr. Bethel asked about the bone marrow studies; we can only say that there is no evidence of a histiocytic reaction within the bone morrow.

Use of Aminophylline (Theophylline Ethylenediamine) to Control Bronchial Spasm Induced by Histamine

RICHARD H. YOUNG, M.D., and ROBERT P. GILBERT, A.B., Chicago: Although the use of aminophylline as an aid to asthma therapy has received considerable attention from clinicians, but little study has been made of the pharmacology of its action on the bronchial musculature. Using the method of Torald Sollmann and A. J. Gilbert, some camera lucida and cinematic studies were made on the reactions of the smaller bronchi and bronchioles in rabbit lung sections. Aminophylline was found to lessen greatly the constricting action of histamine. Further work with guinea pigs showed it to exert a decided protective influence in histamine shock, in which condition it nearly abolishes the severe respiratory symptoms and in many cases seems to prevent the asphyxial death which usually occurs. Experiments are under way to determine its effect, if any, in anaphylactic shock. Other purine derivatives and constricting drugs are also being tried.

Treatment of Chronic Urticaria with Intravenous Injections of Histamine

DRS. H. L. ALEXANDER and ROBERT W. ELLIOTT, St. Louis: During the past few years there have been an increasing number of reports concerning the successful treatment of chronic urticaria with histamine given subcutaneously and by iontophoresis. The rationale of this treatment has never been clearly explained. In the series here reported, histamine has been administered intravenously for the first time to our knowledge as a therapeutic agent. Fourteen patients with chronic intractable urticaria were given this drug by intravenous injection, and eleven secured prompt and complete remission of symptoms. Relapses of three of the eleven occurred but further injections again were successful. Patients in a control series receiving histamine subcutaneously improved, but the results with intravenous injections were by far more prompt and lasting. The technic of intravenous injection was given as well as a discussion of the rationale of this type of therapy.

Physiologic Effects of Histaminase and Histamine

GRACE M. ROTH, PH.D., and BAYARD T. HORTON, M.D., Rochester, Minn.: We determined the normal response of gastric acidity to subcutaneous injection of histamine. Several days after the response had been accurately established, histaminase was introduced into the duodenum from twenty-five to thirty minutes before subcutaneous injection of histamine. Introduction of the histaminase practically abolished the rise of gastric acidity. Likewise, subjects were immersed in water at 24 C. (75 F.) and the curve of their gastric acidity under such conditions was similar to that caused by histamine. The same procedure was carried out as in the first observations except that the subjects were immersed in water at 24 C. (75 F.) instead of receiving subcutaneous injection of histamine. Introduction of the histaminase abolished the rise in gastric acidity and in some instances definitely caused gastric acidity to decrease. Several days after the normal response to histamine had been determined, histaminase was injected intramuscularly thirty minutes before the usual subcutaneous injection of histamine. Again the histaminase practically abolished the rise in gastric acidity. In addition, following the administration of histaminase by duodenal tube and by intramuscular injection the other systemic effects from the subcutaneous injection of histamine were practically abolished. We feel that we now have physiologic evidence that histaminase administered to man will inhibit the action of histamine.

DISCUSSION ON HISTAMINE

DR. CARL DRAGSTEDT, Chicago: Experimental analysis of certain hypersensitive reactions such as anaphylactic shock and peptone shock in animals has shown that these reactions are due to an interaction between antigen or allergen and body cells, with a resulting liberation of certain cellular products which in turn produce the characteristic effects of the reaction. Circumstantial evidence indicates that the allergic reactions of man have a similar mechanism. At present, histamine and heparin are the only two cellular products that have been identified in animal experiments. The implication of these observations on the management of allergic reactions is that, in addition to specific desensitization procedures, one can attempt the use of chemical or pharmacologic antidotes to the cellular products apparently most concerned. These papers today indicate three varieties of approach to this end, namely a pharmacologic antagonism to histamine by means of theophylline, a chemical antagonism to histamine by means of histaminase, and the development of what might be called tolerance to the effects of histamine by the repeated administration of histamine itself.

DR. BAYARD T. HORTON, Rochester, Minn.: A man who suffered excruciating headaches for years was relieved by the administration of histaminase. The pain of which the patient complained was limited to one side of the head. It was a constant, excruciating, burning, boring type of pain which involved the right eye, the temple, the neck and the face. It had none of the tic-like qualities of trigeminal neuralgia and there were no trigger zones. The headache occurred with clocklike regularity, particularly at night. Coincident with the onset of pain, the patient invariably described phenomena of vasodilatation which occurred on the same side of the head as the pain. These consisted of engorgement of the soft tissues of the eye as well as injection of the conjunctiva, plugging of the nose, profuse watering of the eye and nose and flushing of the side of the face. The syndrome, which in every respect corresponded to spontaneous attacks, was produced by the subcutaneous administration of 0.5 mg. of histamine. The patient has remained free from attacks while taking histaminase (T. 360-K).

DR. R. ELLIOTT, St. Louis: Although we began using histamine intravenously on the theory that we could maintain a period of unresponsiveness to the formation of H substance, which in turn is responsible for whealing, we have since been forced to abandon this hypothesis. Since improvement in our cases has persisted for weeks and months, we now suspect that the injection of histamine evokes histaminase and that the latter accounts for the success of this form of treatment.

Changes in Venous Blood Carbon Dioxide Content in Patients Subjected to Rebreathing Experiments

HARRY LANDT, M.D., JULIEN E. BENJAMIN, M.D., and NORMAN JOSEPH, PH.D., Cincinnati: Rebreathing experiments were made on seven cardiac and seven normal patients at basal conditions. Venous blood samples were collected (stasis free) under oil at minute intervals. Simultaneously gas samples were taken from the rebreathing chamber. The blood and gas samples were analyzed for the oxygen and carbon dioxide content. The gas samples showed almost entire absence of carbon dioxide and of course a progressively diminishing oxygen content. Both cardiac and normal patients failed to show any great difference in the venous blood oxygen content. There was a striking decrease in the venous blood carbon dioxide content in cardiac patients, while the carbon dioxide content in the venous blood in normal patients tended to increase. Explanations are offered for these observed changes.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

9: 169-200 (Dec.) 1939

Pellagra and Its Modern Treatment, with Special Emphasis on Borderline States. J. B. McLester, Birmingham.—p. 169.

Study of Nephritis. L. W. Roe, Mobile.—p. 172.

Importance of Early X-Ray Diagnosis in Gastrointestinal Disease. H. M. Simpson, Florence.—p. 175.

Tuberculosis Control Activities in a North Alabama County. R. E. Harper, Tuscumbia.—p. 177.

Feeding Schedule During the First Year. C. E. Abbott, Tuscaloosa.—p. 180.

American Journal of Clinical Pathology, Baltimore

9: 581-628 (Nov.) 1939

Further Simplification of Kolmer Complement Fixation Test for Syphilis. J. A. Kolmer, Philadelphia.—p. 581.

Blood Donor Registry as Substitute for Blood Bank. C. A. Pons, Neptune, N. J.—p. 587.

Problems in Blood Banking. L. W. Diggs and Alice Jean Keith, Memphis, Tenn.—p. 591.

*Pathologic Anatomy of Human Brucellosis. S. M. Rabson, New York.—p. 604.

Carcinoma of Esophagus Perforating Aorta. H. J. Schattenberg and J. Ziskind, New Orleans.—p. 615.

Pathologic Anatomy of Human Brucellosis.—Rabson reports a case in which compound fractures of the arm were sustained by a tractor operator aged 28 while working in a farmyard. Soon afterward, and continuing until death eight months later, he had repeated attacks of fever associated with anemia and leukopenia. The macroscopic agglutination test with Brucella abortus was positive in dilutions through 1:320. General visceral congestion and evidence of continued breakdown of erythrocytes was observed at necropsy. Granulomas were found in the bone marrow, in the splenic veins and in the enlarged liver and spleen. These consisted of epithelioid cells, lymphocytes and giant cells, many of which were multilobated and resembled enlarged megakaryocytes. The granulomas were similar to those described in the literature. The relative rarity of the finding of granulomas is explained by the comparative ease of the body to overcome brucellar infection finally. Only in protracted illness is the characteristic granuloma formed.

American J. Digestive Diseases, Huntington, Ind.

6: 693-760 (Dec.) 1939

Diffuse Spasm of Lower Half of Esophagus. H. W. Schmidt, Rochester, Minn.—p. 693.

The Problem of Gastric Hyperacidity. A. L. Bloomfield, San Francisco.—p. 700.

Effect of Pregnancy and of Antuitrin-S on Cinchophen Ulcers in Dogs. A. A. Farbman, D. J. Sandweiss and H. C. Saltzstein, Detroit.—p. 702.

Calcium Content of Gastric Juice. J. B. Kirsner and J. E. Bryant, Chicago.—p. 704.

Effect on Gastric Secretion of Introducing Diluted Hydrochloric Acid into Duodenum: Study of Normal Humans and Duodenal Ulcer Patients. R. E. Stevens, H. L. Segal and W. J. M. Scott, Rochester, N. Y.—p. 706.

Lymphogranuloma Venereum: Surgical Aspects. B. A. Kornblith, New York.—p. 712.

Intravenous Modification of Hippuric Acid Test for Liver Function. A. J. Quick, Milwaukee.—p. 716.

Use of Pectin-Agar Mixtures in Diarrhea. G. W. Kutscher Jr. and A. Blumberg, Asheville, N. C.—p. 717.

Perforation of Gallstone into Stomach with Resulting Pyloric Obstruction: Case Report with Gastroscopic and Surgical Findings. H. L. Segal and J. J. Morton, Rochester, N. Y.—p. 720.

Complete Biliary Fistula of Four Years' Duration with Hemorrhagic Tendency. L. K. Ferguson and D. G. Calder Jr., Philadelphia.—p. 722.

Carcinoid Tumors of Small Intestine. I. Kross, New York.—p. 725.

American Journal of Diseases of Children, Chicago

58: 1157-1420 (Dec.) 1939

*Disabling Diseases of Childhood: Their Characteristics and Medical Care as Observed in 500,000 Children in Eighty-Three Cities Canvassed in National Health Survey of 1935-1936. Dorothy F. Holland, Washington, D. C.—p. 1157.

Factors Affecting Retention of Nitrogen and Calcium in Period of Growth: II. Effect of Thyroid on Calcium Retention. J. A. Johnston and J. W. Maroney, Detroit.—p. 1186.

The Play Interview: Method of Studying Children's Attitudes. J. H. Conn, Baltimore.—p. 1199.

*Sex Ratios in Families with Hemophilia. Madge Thurlow Macklin, London, Ont.—p. 1215.

Effect of Hyperimmune Human Serum (Lyophile) and of Sulfapyridine on Experimental Murine Pertussis. W. L. Bradford and Mary Wold, Rochester, N. Y.—p. 1228.

Effect of Hyperimmune Human Serum (Lyophile) on Humoral Antibody Titer in Pertussis. C. Katsampes, Rochester, N. Y.; A. C. McGuinness, Philadelphia, and W. L. Bradford, Rochester, N. Y.—p. 1234.

Function of Thyroid and Pituitary in Mongolism, with Report on Blood Groups of American Mongoloid Defectives and Comments on Determination of Cholesterol. C. E. Benda and Emily May Bixby, Wrentham, Mass.—p. 1240.

Disabling Diseases of Childhood.—Holland says that, in a canvass of eighty-three representative urban communities conducted by the United States Public Health Service in 1935-1936, records of illness and medical and nursing care received in a twelve months period were obtained for 518,767 white children under 15 years of age. Disabling illnesses occurred with greater frequency among children under 10 years of age than among persons in any subsequent period except old age. The duration of the average disabling illness was found to be lowest among children, and except in the period of infancy the rate of recovery from illness was higher among children than among adults. Four in every five disabling illnesses occurring among children under 15 years of age were due to acute communicable diseases or diseases of the respiratory tract. In general, a smaller proportion of the disabling illnesses of children than of adults received care from a physician in the home, clinic or physician's office. In cities with a population of 100,000 and over, one in twenty-four children under 15 years of age had been a hospital patient in the year of survey; in the cities of population under 25,000 the ratio was one to thirty-eight. Over half of the hospital cases among children were surgical; diseases of the tonsils and adenoids alone accounted for about two fifths of the cases. Among children in families on relief and in self-sustaining families with incomes up to the $2,000 level the proportion of disabling illnesses receiving care from a physician outside the hospital was lower than in families with incomes of $3,000 and over. This relation was observed consistently in the large, medium-sized and small cities. For all of the diseases of childhood the illnesses of children attended by a physician outside the hospital received more intensive care in families with high than in those with low incomes. The average number of hospital days per child patient, however, was consistently higher among families with low incomes.

Sex Ratios and Hemophilia.—Macklin's curiosity was aroused by the contradictory statements of Eley and of Birch as to alterations in the sex ratio found in families with hemophilia. Eley maintained that transmitters of hemophilia usually have more daughters than sons. Birch stated that the children of transmitters of hemophilia are predominantly male (63 per cent male and 37 per cent female) and that the children of persons with hemophilia are more apt to be female than male. To test the truth of these statements the author analyzed the pedigrees of the transmitters of hemophilia, the pedigree of bleeders and the ratio of unaffected to affected males in families with hemophilia. She found that in families of transmitters collected at random there are more males than females in a ratio of 58.3 to 41.7, owing to the fact that most transmitters are recognized only because they have males in their families in whom the disease develops. When the data are analyzed, computing the number of males one should expect, the excess is found to be apparent, not real. In the families of hemophilic males in which daughters have been said to predominate there was a slight excess of females in a ratio of 54.3 to 45.7. Here again the departure from the expected

value was not outside the limits of what might occur in a sample of this sort. It has been claimed that the ratio of affected to unaffected was much higher than the expected 50:50 ratio. Again, because of the fact that a woman is known for the most part as a transmitter because she has affected sons, the material used to determine the incidence of affected males is weighted in favor of the affected group at the outset. If the incidence is determined only from families of transmitters who are identified by the fact that they had hemophilic fathers, this preponderance of affected males disappears and the ratio of affected to normal is well within the limits of the expected 50:50 ratio. The unaffected actually outnumbered the affected in the series collected, namely 53.2 per cent. Therefore there appears to be no adequate basis for the idea that the sex ratio is disturbed in families bearing the trait of hemophilia, males and females appearing equally in the offspring of transmitters and of affected males, and the defect appearing in about one half of the sons of women who are transmitters.

American Journal of Medical Sciences, Philadelphia

198: 737-876 (Dec.) 1939

A Law of Denervation. W. B. Cannon, Boston.—p. 737.
Blood Viscosity, with Special Reference to Capillary, Arterial (Approximate) and Venous Blood Specimens. A. A. Holbrook and M. Virginia Watson, Milwaukee.—p. 750.
*Clinicohematologic Evaluation of Bone Marrow Biopsies. M. Morrison and A. A. Samwick, Brooklyn.—p. 758.
Auricular Standstill: Its Occurrence and Significance. F. F. Rosenbaum and S. A. Levine, Boston.—p. 774.
Studies on Iontophoresis: I. Experimental Studies on Causes and Prevention of Iontophoretic Burns. H. Molitor and L. Fernandez, Rahway, N. J.—p. 778.
Experimental Studies on Toxicity of Benzedrine Sulfate in Various Animals. W. E. Ehrich, F. H. Lewy and E. B. Krumbhaar, Philadelphia.—p. 785.
Anemia Induced in Rats by Means of Sulfanilamide. T. E. Machella and G. M. Higgins, Rochester, Minn.—p. 804.
Epinephrine in Oil: Its Effectiveness in Symptomatic Treatment of Bronchial Asthma. E. L. Keeney, Baltimore.—p. 815.
*Clinical Experiments with Male Sex Hormones: II. Further Observations on Testosterone Propionate in Adult Hypogonadism and Preliminary Report on Implantation of Testosterone. J. E. Howard and S. A. Vest Jr., Baltimore.—p. 823.
*Evaluation of Vitamin B_1 (Thiamin Chloride) in Treatment of Polyneuritis. M. G. Vorhaus, New York.—p. 837.

Value of Bone Marrow Biopsies.—Morrison and Samwick performed 275 bone marrow studies, obtaining the bone marrow fluid by sternal aspiration. Normal bone marrow was obtained from twenty-eight individuals free of infection, hemorrhage and malignant or other diseases. Bone marrow aspirations were of great diagnostic aid in forty-seven cases in which clinical signs and symptoms and routine blood examinations failed to be of assistance. These were cases of Hodgkin's disease, carcinoma, infections, anemia of pregnancy, pernicious anemia, anerythroplastic anemia, infectious mononucleosis, Gaucher's disease, aplastic anemia, both varieties of leukemia and atrophic cirrhosis of the liver. Observations of leukogenesis in this series confirmed the "shift to the left" theory of Arneth and Schilling as far as the bone marrow was concerned. The most marked left shifts were, in the order named, in acute myeloid leukemias, chronic myeloid leukemias, granulocytopenia, infections and malignant diseases. Slighter degrees of left shift were found in treated pernicious anemia, Niemann-Pick's disease, Cooley's anemia, liver and gallbladder diseases and infectious mononucleosis. Diseases in which left shift was negligible or shifted to the right were polycythaemia vera, hemorrhagic purpura, untreated cases of pernicious anemia, pernicious-like anemias and certain cases of arthritis and Hodgkin's disease. A point of marked value in the differentiation of myelosis and granulocytopenia is the unimpaired erythroid activity in granulocytopenia, while in acute myelosis it is definitely depressed. The normoblast-erythroblast ratio is markedly depressed in chronic myeloid leukemias and the granulocyte-normoblast ratio is not as marked as that occasioned by the leukemoid reactions. The most characteristic pathognomonic observation was the unequivocal lymphatic infiltration of the bone marrow seen in lymphatic leukemia. In eighty-five cases in which there was moderate erythrogenesis in the bone marrow there was no evidence in the periphery of such activity in thirty-six cases. This shows that bone marrow biopsies serve to acquaint one with conditions concerning erythrogenic activity which cannot otherwise be determined in routine peripheral blood examination. Erythrogenesis was most marked in the hemolytic anemias, hemolytic icterus, sickle cell anemia, Cooley's anemia, Niemann-Pick's disease, occasional cases of pernicious anemia and a few cases of Hodgkin's disease. It was slightly increased in malignant conditions, polycythaemia vera and infections. Increased erythrogenic activity was absent in leukemias. An increased number of megakaryocytes was found in the cases of hemorrhagic purpura, even exceeding that found in cases of Hodgkin's disease. Certain criteria proving of great diagnostic aid in the study of various conditions was as follows: In carcinoma of the stomach there was always a maturative defect of the erythrocytes. In other malignant conditions the nonsegmented-segmented and granulocyte-erythroblast ratios were frequently increased. In infections there was a constant increase in left shift involving the metamyelocytes and the staff forms. The nonsegmented-segmented and granulocyte-normoblast ratios were also shifted to the left. Since the same is true of malignant diseases, the absence of fever associated with the blood picture would favor a diagnosis of a malignant condition and rule out infection. Certain diagnoses could not have been made accurately except by means of the bone marrow, for example the finding of Gaucher cells, Niemann-Pick cells and plasma cells. The presence of an increase in plasma cells would speak for a multiple myeloma if corroborative clinical evidence is available, since the latter may be present in certain aplastic or myelophthisic anemias.

Testosterone Propionate for Adult Hypogonadism.—Howard and Vest report observations, extending over two years, on the effects of testosterone propionate in sesame oil given by hypodermic injection to twenty-two adult patients suffering from hypogonadism. Development or reestablishment of secondary sex characteristics with induction of normal libido and potentia ensued in all cases. The dosage for adequate maintenance and optimal therapy was 25 mg. twice a week. Smaller doses, if given more frequently, seemed equally effective, but if injections were given only twice a week doses smaller than 25 mg. proved inadequate. Last year following the work of Thorn, the authors began to implant pellets of from 100 to 800 mg. of pure crystalline testosterone in ten hypogonad patients. The patients who had thus been transferred from injection to pellet therapy have reported enthusiastic and gratifying results. No patients have thus far reported overstimulation effects. Since injection treatment leaves much to be desired, because the injections should be given by physicians and two trips a week to a physician's office for life is rather a strenuous program to anticipate, the extraordinary effectiveness of pellets of crystalline hormones implanted beneath the skin is promising.

Thiamin Chloride for Polyneuritis.—Vorhaus cites the results of treating 520 cases of polyneuritis with thiamin chloride. No improvement occurred in fifteen, partial improvement occurred in 189, and freedom from symptoms occurred in 316. The 505 patients who were improved after taking thiamin chloride for an average of nine weeks were kept under observation after discontinuing this treatment. At the present time 315 have had one or more recurrences of their symptoms. Of 170 patients observed up to one year after discontinuing thiamin, 21 per cent showed recurrences. Of the 111 followed for from one to two years after discontinuing thiamin, 71 per cent showed recurrences. Of the ninety-five observed from two to three years 85 per cent and of 123 followed for more than three years 96 per cent showed recurrences. Improvement in symptoms usually begins to be apparent within three weeks and by nine weeks of thiamin therapy improvement reaches its maximum in most cases. Readministration of thiamin in the treatment of recurrences is highly effective. The author believes it possible that some individuals may have a greater normal need for thiamin than can be obtained from a normal diet. For such cases he suggests the term "primary hypothiaminosis."

American J. Obstetrics and Gynecology, St. Louis

38: 927-1110 (Dec.) 1939. Partial Index

*Significance of Endocrine Assays in Threatened and Habitual Abortion. J. S. L. Browne, J. S. Henry and Eleanor H. Venning, Montreal.—p. 927.
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Glycosurias of Pregnancy. E. Allen, Chicago.—p. 982.
Studies in Artificial Ovulation with Hormone of Pregnant Mares' Serum. S. L. Siegler and M. J. Fein, Brooklyn.—p. 1021.
*Treatment of Afterpains and Painful Engorgement in Puerperium with Testosterone Propionate. A. R. Abarbanel, Baltimore.—p. 1043.
Errors in Diagnosis of Hydrocephalus in Breech Presentation. A. L. Dippel and A. B. King, Baltimore.—p. 1047.
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Rectal Administration of Evipal Soluble in Obstetrics. G. Rosenblum and A. N. Webb, Los Angeles.—p. 1075.
Massive Doses of Sulfanilamide in Pregnancy. J. Kotz and M. S. Kaufman, Washington, D. C.—p. 1079.

The Endocrine Mechanism in Abortion.—Browne and his associates determined the excretion of gonadotropic substance, estrogens and sodium pregnandiol glucuronidate in twenty-four hour specimens of urine in thirty-five cases of threatened or habitual abortion. In some instances this determination was carried out throughout gestation. They formulate the following theory of the endocrine mechanism in threatened and habitual abortion: The evidence suggests that the ovary and the placenta are two sources of progesterone and estrogens in pregnancy. They interpret the rise in pregnandiol excretion, which occurs from the seventieth to ninetieth days in most normal cases, as being due to the beginning of secretion of progesterone by the placenta. The time at which the transfer of function occurs from ovary to placenta varies in different individuals and in the same individual in different pregnancies. If, however, the corpus luteum ceases to produce progesterone for any length of time before the placenta begins to secrete it, abortion will follow. The time at which a deficiency of corpus luteum hormone is most likely to occur is in the transition period between the ovarian and placental phases (late second and third months). This is the critical period of pregnancy. The cause of many abortions is a faulty gestation from the first; the chorion partakes in this abnormality and produces an amount of gonadotropic substance inadequate to prolong the corpus luteum beyond a certain point. Of other patients whose gestation is less abnormal, the function of the corpus luteum may be prolonged for the usual time and the embryo develop normally, but the placenta may be slow in taking over. Patients in whom either of these conditions occurs repeatedly abort habitually. The use of gonadotropic extracts in early pregnancy when large amounts are present seems likely to have little effect. In patients whose excretion of gonadotropic substance is consistently low, the gestation is already degenerate. In these patients progesterone is obviously useless if given after symptoms of abortion appear. The patients in whom the embryo and placenta develop up to a certain period, but the placenta takes over the function of progesterone formation late or the corpus luteum degenerates early, offer theoretically the most hopeful outlook for progesterone therapy, as in many, if the critical period is successfully passed, the placental function begins and further treatment is unnecessary. The determination of excretion of gonadotropic substance in early pregnancy may enable one to distinguish patients in whom gestation is already degenerate from those for whom treatment might be of benefit. Single determinations are of no value, as some patients having temporary low gonadotropic values in early pregnancy do go to term. Patients who have aborted once or more (without obvious explanation) may yet in a subsequent pregnancy proceed entirely normally. Theoretically, in this group the progesterone should be given before the time of usual onset of symptoms and continued over the critical period. The question of dosage is also difficult to determine, but doses of less than 5 mg. are unlikely to have much effect. This dose should be given daily or every other day and may be increased in the presence of persisting symptoms. Treatment should be concentrated during the period of transfer of the formation of progesterone from the ovary to the placenta. If pregnandiol assays are available, a definite rise in pregnandiol excretion may be taken as an index that further treatment is probably unnecessary.

Testosterone Propionate for Afterpains and Engorgement of Breasts.—Abarbanel states that 10 mg. of testosterone propionate subcutaneously, given within two hours post partum, prevented afterpains in twenty-two of twenty-five patients. Forty-one of forty-nine patients with severe afterpains experienced adequate relief after 10 mg. of testosterone was divided between the intramuscular and subcutaneous routes. Of fifty patients with severe painful engorgement of the breasts, 10 mg. of testosterone propionate (5 mg. intramuscularly and 5 mg. subcutaneously an hour later) gave practically complete relief to forty-four (92 per cent). No inhibition of lactation was evident in those mothers who continued to nurse their babies.

Annals of Surgery, Philadelphia

110: 961-1130 (Dec.) 1939

Operative Lengthening of Tibia and Fibula: Preliminary Report on Further Development of Principles and Technic. L. C. Abbott and J. B. deC. M. Saunders, San Francisco.—p. 961.
Clinical Consideration of Methods of Equalizing Leg Length. P. D. Wilson and T. C. Thompson, New York.—p. 992.
*Clinical and Experimental Experiences in Surgical Treatment of Hypertension. L. Davis and M. H. Barker, Chicago.—p. 1016.
Role of Pituitary Gland in Water Balance. P. Heinbecker and H. L. White, St. Louis.—p. 1037.
Control of Water and Electrolyte Balance in Surgical Patients. J. R. Elkinton, M. T. Gilmour and W. A. Wolff, Philadelphia.—p. 1050.
*Combined Use of Zinc Peroxide and Sulfanilamide in Treatment of Chronic, Undermining, Burrowing Ulcers Due to Micro-Aerophilic Hemolytic Streptococcus. F. L. Meleney and H. D. Harvey, New York.—p. 1067.
Fat Embolism. R. I. Harris, T. S. Perrett and A. MacLachlin, Toronto.—p. 1095.
Report on American Board of Surgery. E. A. Graham, St. Louis.—p. 1113.

Surgical Treatment of Hypertension.—Davis and Barker find that the majority of hypertensive patients observed by them respond favorably to the administration of potassium thiocyanate as evidenced by a drop in the systolic and diastolic blood pressures and a fall in the blood cholesterols, total proteins and hematocrit reading. Headache, insomnia, nervousness, fatigue, dyspnea and heart consciousness are relieved, and an actual decrease in the size of the heart occurs. However, there is a small group of patients who are resistant to thiocyanate therapy. The drug must be pushed to the toxic level in treating these individuals before any effect can be obtained, and the lack of a safe margin makes it impossible to control symptoms or blood pressure successfully. In their experience with these patients, bilateral supradiaphragmatic section of the splanchnic nerves alone has failed to decrease their blood pressure or to cause a fall in the chemical constituents of the blood. However, after operation the authors noticed that four patients responded to the administration of thiocyanate. The blood pressure, systolic and diastolic, has shown a definite drop and there has been a decided improvement in the condition of the patients. There has been a parallel decrease in the blood cholesterol, total protein, urea nitrogen and hematocrit readings which compares favorably with the same responses obtained by patients with hypertension who are sensitive to the thiocyanates. The authors believe that section of the splanchnic nerves has in some unknown manner increased the sensitivity of a small number of patients to thiocyanates.

Zinc Peroxide and Sulfanilamide for Burrowing Ulcers.—Meleney and Harvey believe that the ideal treatment for chronic undermining, burrowing ulcers is as follows: When a patient with such a lesion comes to the hospital, after careful anaerobic and aerobic bacteriologic studies, zinc peroxide powder suspended in sterile distilled water in the consistency of a 40 per cent cream should be applied to the wound, care being taken to use effective material, to get contact and to prevent evaporation. This dressing should be removed daily. At the same time, sulfanilamide should be administered by mouth, 1.2 Gm. every four to six hours. If the patient tolerates the medication, and jaundice, destruction of leukocytes and erythrocytes, fever or delirium does not ensue, sulfanilamide should be continued. If toxic symptoms supervene, sulfanilamide should be discontinued. If after one week there are any areas of activity, an operative procedure is required so

as to permit more adequate contact of the zinc peroxide with the affected tissue. Involved areas should be excised as far as can be done with safety to the life of the patient. Treatment should then continue as before. If there is any evidence of persistent activity after another week of treatment, further surgical intervention should be instituted at once with a wider margin of excision. After surgical excision, for the first three or four days the zinc peroxide is extremely adherent to the freshly cut surfaces, which have a gray, inert appearance, and it is difficult and unnecessary to wash off this adherent material. Inflammatory phenomena such as swelling or pain are absent. Exposed nerves may be painful at first, and after the application of zinc peroxide, for a period of from fifteen minutes to an hour, there may be an uncomfortable burning sensation. If this occurs it may be greatly ameliorated by flushing the wound surface with 2 per cent solution of procaine hydrochloride before zinc peroxide is reapplied. On the fourth or fifth day, little areas of bright red granulation will appear and these will rapidly increase in size until the whole wound is covered. Then pain and sensitivity disappear completely. As soon as new epithelium grows in from the margin, skin grafts will take. In most instances the small deep grafts are most suitable and these should be almost 100 per cent successful. The grafts should be held in place by a single layer of coarse meshed gauze sealed at the cutaneous margin with collodion. They should then be covered with fine meshed gauze moistened in saline solution and cut to the pattern of the wound, this in turn covered with wet saline compresses and sealed with petrolatum jelly or zinc oxide ointment for twenty-four hours. The following day the zinc peroxide suspension should be applied over the sealed dressing. In another twenty-four hours the coarse meshed gauze may be removed and the zinc peroxide applied directly to the grafts. All living grafts will be well attached and pink by this time. When new epithelium begins to grow out from the margins of the grafts and anaerobic cultures reveal no viable hemolytic streptococci, it is well to change the ointment to 0.5 per cent oxyquinoline in 5 per cent scarlet red ointment, which seems to stimulate the rapid growth of epithelium and hasten the final closure of the wound.

Archives of Internal Medicine, Chicago

64: 1133-1354 (Dec.) 1939

Periarteritis Nodosa: Report of Case. R. Fitz, H. Parks and C. F. Branch, Boston.—p. 1133.
Chronic Malaria: Clinical Consideration. G. H. Fondé and E. C. Fondé, Mobile, Ala.—p. 1156.
*Biophotometer Test as Index of Nutritional Status for Vitamin A. Grace Steininger and Lydia J. Roberts, Chicago.—p. 1170.
*Infantilism in Ulcerative Colitis. S. Davidson, New York.—p. 1187.
Recurring Encephalomeningoradiculitis with Fibromyositis Following Poliomyelitis: Bacteriologic Study of Sixty-Four Cases. E. C. Rosenow, Rochester, Minn.—p. 1192.
Tumors of Adrenal Glands: I. Modified Air Injection Roentgen Technic for Demonstrating Cortical and Medullary Tumors. O. Cope and R. Schatzki, Boston.—p. 1222.
Elevation of Urea Nitrogen Content of Blood Following Hematemesis or Melena. L. Schiff and R. J. Stevens, with technical assistance of Ellen S. Garber, Cincinnati.—p. 1239.
Intercapillary Glomerulosclerosis: Syndrome of Diabetes, Hypertension and Albuminuria. R. A. Newburger and J. P. Peters, New Haven, Conn.—p. 1252.
Physiologic Basis of Intravenous Dextrose Therapy for Diseases of Liver. S. Soskin and M. Hyman, Chicago.—p. 1265.
Studies on Destruction of Red Blood Cells: I. Chronic Hemolytic Anemia with Paroxysmal Nocturnal Hemoglobinuria: Investigation of Mechanism of Hemolysis, with Observations on Five Cases. T. H. Ham, Boston.—p. 1271.
*Diagnosis of Hypersensitiveness to the Bee and to the Mosquito: Report on Successful Specific Treatment. R. L. Benson, Portland, Ore.—p. 1306.
Review of Neuropsychiatry for 1939. S. Cobb, Boston.—p. 1328.

Biophotometer Test as Index of Vitamin A Nutrition.—To prove or disprove the usefulness of the biophotometer test in nutrition, Steininger and Roberts present controlled studies. They maintain that if the biophotometer test is a valid measure of vitamin A stores there should be a significant difference in the readings for subjects with good and those with poor dietary histories. The results of the test of 100 children from the University Laboratory School and 160 children from two of the poorest sections of the city were compared. Two bases of comparison were used: the mean biophotometer readings for the groups and the percentage of children in each group whose readings classed them as normal, borderline and subnormal. By both methods of comparison the children from the better socio-economic group had a definitely higher status (22.8 for the first and 62.6 dial spaces for the last reading in the recovery period) than those from the less favored groups, for whom the readings were respectively 19.7 and 55.8. The differences between the biophotometer readings for the two less favored groups were eight times the probable error and therefore are statistically significant. By the second method of analysis, 26 per cent of the university group children were classed as "normal" by the Jeans standards and only 21 per cent as definitely subnormal, as compared to 15.6 per cent "normal" and 42 per cent "subnormal" of the poorer group. These comparisons tend to support the validity of the test. However, acceptance of validity makes it necessary to explain why the 74 per cent of the readings of the superior group of children fell in the borderline and subnormal zones. The diets in this group may not all have been optimal in vitamin A, but it is difficult to believe that so large a number were deficient. An alternative explanation would be that the diets of the majority of these children were in reality adequate and that the standards of Jeans are too high. This possibility is supported by the mean readings of forty-six children of the university group of children who had been taking vitamin A concentrates but whose readings were no higher than those for the rest of the group. Although from further studies it was observed that some relation exists between the biophotometer readings and vitamin A nutrition, the relation is not close enough to warrant the use of the test as a means of diagnosing subclinical vitamin A deficiency. However, its use for determining deficiencies of vitamin A in dark adaptation seems promising and worthy of further experimentation.

Infantilism in Ulcerative Colitis.—According to Davidson, in the last two years at Montefiore Hospital infantilism has been observed in three instances of ulcerative colitis. Further reports of cases are desirable to establish the incidence. The processes of nutritional deficiencies in the chronic diarrheas are pointed out, and it seems that any long-continued disturbance of normal metabolic processes taking place during maturation and development may result in secondary infantilism.

Hypersensitiveness to Insect Bites.—Benson divides the types of sensitization into three groups: (1) innocently, by scales or dust shed from the wings or body, (2) by injection of venom through the sting or (3) by instillation of salivary secretion. Certain persons fail to react to the bite of a given insect. The reaction of most people consists of an early wheal and a late papule. The effect is probably due not to the action of a secreted irritant but to an acquired specific sensitization. The specificity probably concerns the species or, at most, the order of insects. Persons become sensitive to a particular species of insect in varying degrees. Sensitization is difficult to induce in a nonsensitive person, and desensitization of a sensitive person is even more difficult and is also transient. Passive transfer is possible but difficult and applies to the early wheal but not to the papule. Instances of extreme sensitization to the sting of the honeybee and the bite of the mosquito are described, in which the reaction reached its height in from twenty-four to forty-eight hours and consisted of a large, hot, red, painful, slightly raised infiltration which persisted for several days. With both species the reaction to the insect's puncture and to intracutaneous inoculation of extract was found to be due to the body substance of the insect carried in this fluid and not to poison of the venom or to the salivary secretion. Extracts of the bodies of these insects had the property of causing large immediate wheals and later infiltrations similar to the effects produced by the insect's puncture of the skin. Reinoculation in the same site desensitized locally as far back as the late reaction but not to the immediate wheal. Passive transfer by the Prausnitz-Küstner technic was demonstrated for the bee and imperfectly for the mosquito, but in each instance for the immediate reaction only. Repeated injections of antigens in increasing doses resulted in several adequate general desensitizations to the violent effects of the punctures of each species of insect. This led to the conclusion that these antigens are probably essentially different from those causing the ordinary mild reactions of the same insects. The

results afford conclusive evidence that (1) extreme hypersensitiveness to the sting of the bee and other Hymenoptera, with its hazard to human life, can be eliminated, usually for a period of years, by a series of specific inoculations and (2) large, painful and toxic infiltrations from bites of mosquitoes can be similarly prevented.

Journal of Lab. and Clinical Medicine, St. Louis

25: 225-332 (Dec.) 1939. Partial Index

Changes in Chemistry of Cerebrospinal Fluid During Encephalography. A. Levinson, I. Kaplan and D. J. Cohn, Chicago.—p. 225.
*Studies in Blood Preservation: Fate of Cellular Elements in Relation to Potassium Diffusion. C. R. Drew, Katharine Edsall and J. Scudder, New York.—p. 240.
*Germicidal Properties of Oxides of Nitrogen. H. G. Williams and T. A. Hartgraves, Phoenix, Ariz.—p. 257.
*Ultraviolet Irradiation and Vitamin C Metabolism. C. W. Jungeblut and Rose R. Feiner, New York.—p. 263.
Gonorrheal Myelitis with Associated Porphyrinuria Following Sulfanilamide. F. G. Norbury, Jacksonville, Ill.—p. 270.
Hematologic Study of Seventy-Six Pneumonia Cases Treated with Sulfapyridine, Including Fatal Case of Agranulocytosis. J. R. E. Morgan and H. K. Detweiler, Toronto.—p. 275.
Stable Adrenal Cortical Extract. R. J. Schachter, Chicago.—p. 281.
Persistence of Infection with Giardia Intestinalis in Man. Dorothy W. Miles and J. T. Culbertson, New York.—p. 286.
Method of Employing Horse Plasma and Hemoglobin as Enrichments in Primary Gonococcus Isolations. Lenore R. Peizer, New York.—p. 299.
Slide Flocculation Test for Diagnosis of Syphilis: Preliminary Report. S. L. Leiboff, New York.—p. 317.

Blood Preservation and Potassium Diffusion.—Drew and his associates carried out studies to determine whether the previously reported tenfold rise in about thirty days in plasma potassium of preserved blood was a pure diffusion process or whether it was due to actual cell destruction. They state that in heparinized preserved blood there is little or no actual loss in the number of erythrocytes over a period of thirty days. The hemoglobin content remains constant in the total sample, though from 15 to 25 per cent may be found in the plasma. The mean cell diameter of the erythrocytes is reduced about 20 per cent in thirty days. The polymorphonuclear leukocytes are diminished by 50 per cent in forty-eight hours and are amorphous masses in fifteen days. The lymphocytes, monocytes and eosinophils do not disintegrate so rapidly; the latter are particularly well preserved. The thrombocytes rapidly fall to a low level and then remain constant at about 30,000 for some fifteen days.

Germicidal Properties of Oxides of Nitrogen.—From their study of the germicidal action of the nitrogen oxides Williams and Hartgraves find that compressed air passed through an electric arc produces a mixture of gases which is an effective bacteriostatic and bactericidal agent. The bacteriostatic and bactericidal action of this gas is effective in an exposure time of fifteen seconds. The gas is also fungistatic and fungicidal. The vegetative forms of bacteria and fungi are the least resistant to the gas, the spore forms being very resistant. It is believed that the bactericidal power of the gas is due to the formation and deposition of minute amounts of nitric acid and other agents contained in the gas. These as yet have not been analyzed. The gas is easily and economically produced and should find its greatest field of usefulness in the treatment of infected wounds and chronic draining sinuses, particularly osteomyelitis and tuberculous sinuses.

Ultraviolet Irradiation and Vitamin C Metabolism.—Jungeblut and Feiner investigated the relationship that seems to exist between vitamin C metabolism and the effect of ultraviolet rays in the production of disease, when irradiation transcends the threshold of physiologic stimulation. Prolonged ultraviolet irradiation of albino guinea pigs, rabbits and monkeys failed to bring about any change in the tissue levels of vitamin C. When a superficial burn was produced on the skin of guinea pigs by the local application of heat, a more or less marked diminution of the vitamin C stores occurred in the brain, liver, spleen and adrenals. Possibly toxic, histamine-like substances, which have an adverse effect on adrenal function, originate from the burned tissue and require large amounts of vitamin C for their detoxification. This process may be analogous to the well known depletion of vitamin C following the necrotizing action of diphtheria toxin. The intact vitamin C stores after irradiation are of particular interest in view of Wright's observation that evidence of disturbed vitamin C metabolism occurred only in one individual who showed definite intolerance to ultraviolet irradiation. Evidently a mechanism operates which protects the tissues of some individuals against damage and preserves the vitamin C reserves in the tissues; but the absence of such a mechanism in other individuals, or its breakdown by overdosage of rays, may initiate a derangement of vitamin C metabolism.

Journal of Nervous and Mental Disease, New York

90: 709-844 (Dec.) 1939

Comparison of Thalamus in Dementia Praecox and Manic Depressive Brains: Biometric Analysis. R. J. Stein, Canandaigua, N. Y., and L. H. Ziegler, Wauwatosa, Wis.—p. 709.
Difficulties of Being "Normal." L. W. Darrah, Northampton, Mass.—p. 730.
*Parkinsonian Syndrome Resulting from Electrical Injury: Two Cases. M. H. Weinberg, Pittsburgh.—p. 738.
Studies in Insulin Treatment of Dementia Praecox: Report of 100 Cases. C. F. Read, Gert Heilbrunn and E. Liebert, Elgin, Ill.—p. 747.
Trigeminal Neuralgia in Multiple Sclerosis. B. Finesilver, New York.—p. 757.
Epileptiform Seizures in Insulin Shock Therapy: Clinical Study. D. Goldman, Cincinnati.—p. 765.

Parkinsonian Syndrome from Electrical Injury.—Weinberg reports two cases of parkinsonian syndrome following electrical injury. Both patients have parkinsonian features but differ in certain particulars. One was injured while using the telephone, resulting in deafness on the left side and athetosis. The other was diagnosed as having hemiplegia of the right side with parkinsonism due to a lesion involving the left basal ganglion and internal capsule as a result of electrical injury. The author warns that there is a too ready tendency to diagnose functional disease in such cases. Careful examination should be made for manifestations of organic disease. Because of their great importance and the insufficiency of scientific data on this subject such cases should be reported, so that more may be learned about the neurologic conditions resulting from electrical injuries.

Laryngoscope, St. Louis

49: 1043-1150 (Nov.) 1939

Review of Available Literature on Pharynx and Pharyngeal Surgery for 1938. F. E. LeJeune, New Orleans.—p. 1043.
*Studies in Labyrinthine Fenestration to Improve Hearing: Preliminary Report. S. J. Kopetzky, New York.—p. 1064.
Experimental Production of Deafness in Young Animals by Diet. E. Mellanby, London, England.—p. 1090.
Use of "Seconal" in Minor Procedures in Otolaryngology. E. H. Lyman, St. Louis.—p. 1119.
Remarkable Sojourn of Aspirated Foreign Body. C. E. Purcell, Paducah, Ky.—p. 1124.
Two Congenital Nasal Deformities: Bifid Nose and Bulldog Nose. M. M. Kopp, Brooklyn.—p. 1128.
Relation of Chest Conditions to Sinus Disease: The Otolaryngologist's Point of View. A. T. Smith, Philadelphia.—p. 1134.
Functional Vocal Disabilities. W. A. C. Zerffi, New York.—p. 1143.

Labyrinthine Fenestration to Improve Hearing.—Kopetzky declares that the problem of surgical relief to the deafened is far from solution. He urges that the surgical work be continued and that physiologists reexamine, in the light of the data obtained by this surgery, the fundamentals of hearing. On the question of what permanent value surgery holds for the deafened, no final conclusion can be made as yet, but there is reason to believe that something is developing which will be of value in the therapy for deafness. Regarding operative therapy (labyrinthine fenestration) for progressive deafness and otosclerosis the author agrees with Campbell and Canfield that the tissue destined to cover the fenestration is less important than the manner of making the fistula. Contrary to what has been said of the heat caused by the polishing burr, he believes that the heat which the burr produces is one of the most important elements in inhibiting bony closure of the fistula. In some of his best results, as far as maintaining a patent fistula is concerned, he so worked the burr that sufficient heat was created to produce a thermal labyrinthine reaction, evidenced by induced nystagmus, long before the telltale dark line had brought the endosteal layer of the canal into view. When, in the earlier cases, he tried not to produce heat, his results he maintains were not as good as when he disregarded this warning and actually strove to produce a degree of local heat with the burr. The size of the fenestration plays a part in the end results. His best

results have been obtained with a fenestration of from 1 to 3 mm. in length. Before operating, it is necessary to know which ear was first involved in the deafness. That probably is the ear at fault, and he thinks that the second ear has lost function largely because there has been a lack of stimulation to the association centers over a long period from the initially involved side.

Maine Medical Association Journal, Portland

30: 311-350 (Dec.) 1939

Speech and Voice Defects: Various Syndromes. J. S. Greene, New York.—p. 311.
Libraries and the Hospital. J. C. Meakins, Montreal.—p. 321.
Urinary Complications and Water Balance. C. H. Jameson, Rockland. —p. 326.

Medicine, Baltimore

18: 431-504 (Dec.) 1939

Properties of Viruses. W. M. Stanley, Princeton, N. J.—p. 431.
Myotonia. A. Ravin, Denver.—p. 443.

Michigan State Medical Society Journal, Lansing

38: 1021-1138 (Dec.) 1939

Diagnosis and Treatment of Cholecystitis. R. D. McClure, Detroit.—p. 1035.
Flexible Gastroscope as Diagnostic Aid. D. J. Sandweiss, H. C. Saltzstein and M. H. Sugarman, Detroit.—p. 1044.
Cerebral Anoxia and Anesthesia. F. Schreiber, Detroit.—p. 1050.
Luetic Polyneuritis: Case History. A. Dubnove, Detroit.—p. 1056.
Survey of Iodized Salt Obtained, on Open Market, from Various Districts of State of Michigan, 1939. D. M. Cowie and J. J. Engelfried, Ann Arbor.—p. 1057.
Clinical Uses of Endometrial Biopsy. L. S. Griffith and W. P. L. McBride, Grand Rapids.—p. 1064.
Malignant Solitary Polyp of Sigmoid Colon Causing Intussusception: Case History. E. G. Krieg and W. S. Lovas, Detroit.—p. 1069.
Syphilis Control in Michigan and Our New Prenatal Law. Advisory Committee on Syphilis Control.—p. 1070.
Stored Blood Transfusion in a Relatively Small General Hospital. E. P. Vary and J. B. Krahl, Flint.—p. 1072.
*Bromide Intoxication. R. W. Waggoner and D. A. Boyd, Ann Arbor. —p. 1080.
Federal and State Cooperation in Maternal and Child Health. Katharine F. Lenroot, Washington, D. C.—p. 1088.
Occupational Hygiene in Michigan Sixty-Five Years Ago. C. P. McCord, Detroit.—p. 1094.

Bromide Intoxication.—Waggoner and Boyd recognize the beneficial effects of bromides, when correctly used, but they emphasize the equal potentiality for harm when they are given injudiciously. Even in suitable cases, after prolonged administration, the blood concentration may soon exceed the safe level of about 125 mg. per hundred cubic centimeters. The physician must carefully select cases for bromide administration and insist on an adequate fluid intake and sufficient chlorides (at least a daily dose of 15 Gm. of chlorides is necessary when the daily sodium bromide intake is 45 grains [3 Gm.]). As the patient may have already received large quantities of bromide from a previous physician or by self medication, these drugs should never be prescribed without careful inquiry into the history of medication and a chemical examination of the blood or urine. This can easily be done by the method of Belote. Small strips of filter paper are soaked in a saturated solution of fluorescein in 60 per cent acetic acid and allowed to dry. The suspected body fluid is placed in a test tube. To this are added a few crystals of potassium permanganate. After agitation, a few drops of concentrated sulfuric acid are added and the fluorescein paper is held, after moistening with 2 per cent acetic acid, at the mouth of the test tube. The presence of even minute amounts of bromine is at once indicated by a rapid change in color from the original yellow to a bright pink. If bromide is present, the blood concentration should be determined by the Hauptmann modification of Walters' method. If these precautionary measures are carefully observed, bromide therapy is valuable when mild sedation is necessary. Bromides accumulate quickly in the blood whenever the cardiovascular system is disordered and even small doses may cause a bromide intoxication. The increased restlessness and anxiety of these patients, which is due to beginning toxicity, is frequently misinterpreted as a continuation of the original nervous tensional state and the medication is maintained with the ultimate production of severe intoxication. Individuals with mild mental disorders, organic brain syndromes or basically neurotic personalities, that is low psychic reserve, must be considered as already in precarious balance, and potentially intoxicating drugs such as bromides should be used with great caution.

Minnesota Medicine, St. Paul

22: 807-888 (Dec.) 1939

Diagnosis of Virus Diseases. T. Francis Jr., New York.—p. 807.
*Rationale of Bile Salt Therapy in Biliary Tract Disease. A. C. Ivy and A. L. Berman, Chicago.—p. 815.
Scope of Surgery in Control of Pulmonary Tuberculosis. H. A. Carlson, Ah-Gwah-Ching.—p. 820.
Diagnosis and Treatment of Hemorrhagic Diathesis. C. H. Watkins, Rochester.—p. 824.
Recurrent Thyrotoxicosis After Thyroidectomy. O. J. Hagen, Moorhead. —p. 828.
Pelvic Pain. W. A. Coventry, Duluth.—p. 832.

Bile Salt and Biliary Disease.—Ivy and Berman list the activities of bile salts in the economy of the body. They promote the formation of bile, keep fatty acids in solution, aid in the digestion and absorption of fats, facilitate the absorption of iron and calcium, have a laxative action, take an important part in detoxifying bacterial toxins in the intestinal tract, when bile salts are being secreted liver glycogen is diminished and they favorably influence the bile-salt-cholesterol ratio. In the absence of bile salts in the intestine the oral administration of bile salts is indicated to improve digestion and absorption. The role of bile salts in the absorption of vitamins D and K and fats is alone a sufficient indication. The presence of bile pigment in the feces does not necessarily indicate that bile salt is being secreted in the bile. The liver may excrete pigment when it does not form and secrete bile salts. Frequently in biliary tract disease, in the absence of total obstruction, sufficient hepatitis may be present to diminish bile salt synthesis markedly but not to prevent bile pigment excretion. In biliary tract disease without acute hepatitis, bile salts should be administered to flush the biliary passages with a copious flow of low viscosity. Bile salts can be used with the hope of counteracting a tendency toward stasis and its effects and in this way produce and maintain a copious flow of bile through the biliary passages. However, to obtain this effect the patient must have a liver that will secrete bile salts. A brisk flow of fluid through the hepatic ducts tends to prevent ascending infection. Since bile salts are laxative, a lack of bile salts would increase the tendency toward constipation and the increase in constipation would further affect the liver and sphincter, thus possibly setting up a vicious circle that is broken best by the oral administration of bile salts. To what extent the administration of bile salts will change the chemistry of the bile in the gallbladder and will flush out the gallbladder is uncertain. It is possible that "flushing" or a "washing out" of the gallbladder might be obtained by giving bile salts and then fat to empty the gallbladder, repeating the procedure three or four times a day. The authors doubt the wisdom of bile salt therapy in the presence of biliary tract disease and acute hepatitis, except for the purpose of improving intestinal absorption. It is a scientifically directed procedure only when the liver and biliary tract of the patient are proved to be functioning abnormally and bile salt substitution or additive therapy is necessary to aid in correcting the disturbance.

New England Journal of Medicine, Boston

221: 883-920 (Dec. 7) 1939

Physical Examination of Groups. R. W. Buck, Boston.—p. 883.
*Drug Therapy in Cases of Infantile Cerebral Palsy and Allied Disorders, with Special Reference to Hyoscine. I. C. Nichols, Providence, R. I., and S. R. Warson, New Haven, Conn.—p. 888.
Comparison of Davies-Hinton and Wassermann Reactions in Cerebrospinal Fluid. C. Brenner and H. H. Merritt, Boston.—p. 891.
Inadequacy of Injection Treatment of Hernias. R. Slater, Boston.—p. 895.

Drug Therapy in Infantile Cerebral Palsy.—In treating patients with infantile cerebral palsy, Nichols and Warson carried out a program of training including hydrotherapy, massage and active and passive exercise. In considering a pharmacologic approach also the hypothesis was advanced that treatment with a drug in the atropine group might reduce the hypertonus, influence the athetosis, speed up the process of training and eliminate the drooling. The drug of choice was scopolamine hydrobromide, which they administered in six cases, with minor interruptions, for two and a half years. The usual maintenance dose was $\frac{1}{500}$ grain (0.0003 Gm.) given twice daily by mouth. There was no change in the treatment program other than the addition of the drug therapy. During the course of this study the scopolamine was discontinued and the effects of three

other drugs, phenobarbital, amphetamine (benzedrine) sulfate and atropine, were tested over two week periods. The authors found that under scopolamine therapy drooling was abolished in all cases, the athetosis was lessened, confidence was increased, relaxation improved and progress in retraining was more rapid. One child learned to walk in three days. No general contraindications to scopolamine were established. In particular there were no increasing tolerance, no annoying side effects and no untoward symptoms even when the drug was suddenly withdrawn after periods as long as nine months. The favorable response to scopolamine came early or not at all. Amphetamine sulfate, phenobarbital and atropine sulfate, which were investigated clinically in the same series, proved disappointing.

221: 921-958 (Dec. 14) 1939

Riboflavin Deficiency in Man. N. Jolliffe, H. D. Fein and L. A. Rosenblum, New York.—p. 921.
Etiology and Pathogenesis of Thyrotoxicosis, with Special Reference to Its Pituitary Origin. A. W. Elmer, Lwów, Poland.—p. 927.
*Pinworms and Appendicitis. T. W. Botsford, H. W. Hudson Jr. and J. W. Chamberlain, Boston.—p. 933.
Rocky Mountain Spotted Fever: Case Report. N. A. Welch and P. J. Jakmauh, Boston.—p. 937.
Vascular Diseases, with Particular Reference to Arterial Hypertension. S. Weiss, Boston.—p. 939.

Pinworms and Appendicitis.—Botsford and his associates say that seventy-one of 1,343 appendixes removed at the Children's Hospital, Boston, from 1929 to 1939 were infested with pinworms. They resorted to microscopic search as well as to gross inspection. The incidence of appendixes containing pinworms would be higher if such a procedure was followed in a routine manner in other hospitals, as this figure has more than doubled at this hospital since microscopic examination was included. Twenty-six patients had acute appendicitis and pinworm infestation. The cases differed in no way from the usual picture of acute appendicitis in children. Forty-five patients had no inflammatory change in the appendix but had pinworm infestation. All had abdominal pain and all were relieved by appendectomy. Twenty-nine of the thirty patients who had chronic abdominal pain were relieved by appendectomy. Twenty-two patients who had no microscopic evidence of appendicitis but had pinworm infestation of the appendix presented a syndrome exactly like that of acute appendicitis. Pinworm infestation of the appendix cannot be differentiated with certainty from acute appendicitis. It may be suggested by a history of pinworm infestation and recurrent abdominal pain. The mechanism of the mode of action of pinworms in the appendix is unknown. The safest treatment of appendical symptoms due to pinworms is appendectomy.

Oklahoma State Medical Assn. Journal, McAlester

32: 433-466 (Dec.) 1939

Present Status of Active Immunization in Prevention of Disease. J. A. Kolmer, Philadelphia.—p. 433.
The Private Physician's Part in a Public Health Program. J. C. Rose, Oklahoma City.—p. 441.
Thiocyanates in Treatment of Hypertension. W. T. Bynum, Chickasha.—p. 444.
Cortical Hormone in Treatment of Bromide Intoxication. C. H. Campbell, Oklahoma City.—p. 447.
Routine Laboratory Examinations for Typhoid Fever and Dysentery Organisms. W. D. Hayes and Rita Robinson, Oklahoma City.—p. 449.

Pennsylvania Medical Journal, Harrisburg

43: 209-400 (Dec.) 1939

Prolapse of Uterus. J. L. Baer, Chicago.—p. 221.
Surgical Control of Hyperacidity. V. G. Burden, Philadelphia.—p. 227.
Surgeon's Place and Procedure in Peptic Ulcer. G. C. Engel, Philadelphia.—p. 231.
Treatment of Illness of Emotional Origin by the General Physician. E. Weiss, Philadelphia.—p. 239.
Frequent Nonulcerous Cause of Peptic Ulcer Syndrome. L. M. Morrison, W. A. Swalm and C. L. Jackson, Philadelphia.—p. 243.
*Treatment of Acne Vulgaris with Estrogenic Hormone: Clinical Investigation. L. Hollander and C. L. Schmitt, Pittsburgh.—p. 249.
Importance of Syphilis in Diagnosis and Treatment of Lesions of Nose and Sinuses. A. T. Smith, Philadelphia.—p. 252.
Conservation of America's Greatest Asset. J. M. Higgins, Sayre.—p. 256.
*Allergic Vertigo. L. H. Criep, Pittsburgh.—p. 258.

Treatment of Acne Vulgaris with Estrogen.—Hollander and Schmitt used emmenin (an estrogenic substance of placental origin) in the treatment of forty-one female and nineteen male patients with acne. The patients were from 14 to 25 years of age and the duration of their acne ranged from two months to twelve years. No patient was under treatment less than three or more than twelve months. As the study was carried on over a period of two years, any improvement due to normal seasonal variation can be disregarded. The diet was not restricted, nor were any local medicaments used. In female patients the estrogenic medication was discontinued during each menstrual period. The forty patients who had no previous treatment and who were not markedly improved after estrogenic therapy received fractional doses of roentgen radiation, the application of a sulfur lotion and a dietary regimen. This was done in an attempt to ascertain if the previously given estrogenic substance might influence the effect of this routine therapy. Fourteen of the sixty patients showed a definitely good response to estrogenic therapy. Ten of these were female and four male. Five patients experienced moderate improvement, twenty-three slight improvement and the remainder were either slightly improved or made worse. Of the forty patients who were given further roentgen therapy, five were markedly improved, twenty-one moderately, eight slightly and six experienced no change. Improvement, if it occurred, always manifested itself by the end of the second month. Seven of the ten improved female patients had a definite association between the acne and the menstrual period. Only one of the fourteen patients who were definitely improved did not have an oily skin. Without exception the oiliness of the skin became much less during the estrogenic treatment. This decreased oiliness was also always observed on the scalp. After the medication was discontinued, eleven of the fourteen improved patients had relapses. The superficial papulocystic acne lesion on an oily skin was the type of lesion most constantly influenced by the estrogenic substance. The duration of the acne in the improved group varied from eighteen months to eleven years. Only one patient showed any untoward reaction: nausea. This patient later tolerated the drug very well. The only positive laboratory observation was a moderate degree of secondary anemia shown by seven of the patients. No patient who previously had normal menses experienced any irregularity, delay or dysmenorrhea of the menses. Two patients who had marked dysmenorrhea found that this symptom was much less severe when they were taking the estrogenic substance. However, a third patient was not helped. Six of the patients who previously had marked irregularity of the menses showed a tendency toward a regular cycle.

Allergic Vertigo.—Criep believes that the incidence of labyrinthine vertigo of allergic origin is greater than suspected. The pathologic physiology is in all likelihood an edema of the various structures of the internal ear. The symptoms depend on which of these structures is edematous. The diagnosis of allergic vertigo is based on the absence of other etiologic factors, the presence of a positive family history of allergy, the presence of associated allergic manifestations (asthma, hay fever, eczema and the like), a history of clinical sensitivity, the diagnosis of blood eosinophilia and positive cutaneous tests and/or the response to epinephrine therapy. Vertigo of allergic origin may occur either as a single isolated symptom or in conjunction with a series of other symptoms such as tinnitus, deafness and gastric manifestations. During the attack the patient may break out in a cold sweat. The attack may be preceded or accompanied by nausea and vomiting. Tinnitus may be unilateral or bilateral and is as a rule high pitched. The impairment in hearing is usually partial and temporary, returning to normal in the interval between attacks. Labyrinthine vertigo may result from causes other than allergy: infections, tumors, toxemia or hemorrhage in the internal ear or cerebral centers. The pathologic physiology of allergic headaches is thought to be that of an edema of the meninges. Many of these patients complain of severe dizziness coincident with the headaches. The vertigo of these patients may likewise be the result of an edematous process of the membranous labyrinth. Adequate treatment is predicated entirely on a correct diagnosis. After all possible causes of vertigo are eliminated, the patient should be subjected to an allergic study. Based on information elicited from such an investigation, suitable changes can be made in the patient's diet and environment. Hyposensitization, whenever indicated, is undertaken.

Philippine Islands Med. Association Journal, Manila

19: 603-652 (Oct.) 1939

Unusual Types of Typhoid Infections: III. P. T. Lantin, N. Mendiola, S. Morales and M. Ramos, Manila.—p. 603.
*Simple Serologic Test for Yaws and Syphilis Suitable for Provincial Hospitals and Field Dispensaries: Comparison with the Kahn and Wassermann Tests in Over 5,000 Cases. R. J. Navarro and F. Gomez, Manila.—p. 607.
Local Observation on Use of Fresh Apple in Gastro-Enteritis. F. Z. Cruz, Manila.—p. 611.
Observations on Sulfapyridine in Treatment of Pneumonias. L. B. Greentree, M. B. Lara, G. Peñalosa and L. Gallardo, Manapla, Occidental Negros.—p. 615.

Serologic Test for Yaws and Syphilis.—The serologic test for yaws and syphilis that Navarro and Gomez discuss was described by Cassili in 1936 and an abstract of his article appeared in THE JOURNAL, Oct. 24, 1936, page 1417. The authors present more comparative studies to establish the reliability of the test both as to sensitivity and as to specificity. They used this simple slide test and compared its results with the Kahn and Wassermann tests on 5,390 samples of serum. There was an agreement of 94.8 per cent of all three tests. This test and the Kahn test showed a 1.63 per cent disagreement. With the Wassermann test there was a disagreement of 4.34 per cent. The authors recommend the test as a routine serum diagnostic test for syphilis and yaws, especially in the provincial hospitals and field dispensaries in which well trained technicians and necessary apparatus for other tests are not available. It is further recommended that doubtful or weakly positive results be checked with either the Kahn or the Wassermann test or both whenever possible.

Review of Gastroenterology, New York

6: 454-557 (Nov.-Dec.) 1939

Responsibility of the Gastro-Enterologist for the Psychoneurotic Patient. G. C. Robinson and M. Paulson, Baltimore.—p. 454.
Angiofibrosarcoma of Stomach of Seventeen Years' Duration. R. B. Phillips and A. B. Rivers, Rochester, Minn.—p. 468.
Present Status of Chronic Gastritis. I. R. Jankelson and C. W. McClure, Boston.—p. 473.
Therapy of Colon Stasis. B. Fantus, Chicago.—p. 476.
Gastrointestinal Tuberculosis: Correlation of Clinical Diagnoses and Autopsy Findings in Eighty Cases with Review of Literature. E. B. Freilich, G. C. Coe and N. A. Wien, Chicago.—p. 483.
*When Is a Peptic Ulcer Healed? S. L. Cash, New York.—p. 491.
Treatment of Cardiospasm Illustrating New Cardiospasm Dilator and Bisected Esophageal Tube. M. Einhorn, New York.—p. 499.
Perirectal and Perianal Infection as Related to Pruritus Ani. R. J. Connors, New York.—p. 511.
Role of Giardia in Gastrointestinal Symptoms. Mary M. Spears, Philadelphia.—p. 512.
Gastroscopic Observations in Gastric Cancer. H. R. Liebowitz, Brooklyn.—p. 516.
Primary and Recurrent Obstruction of Common Duct. M. Behrend, Philadelphia.—p. 526.
Evaluation of Bile Salts in Biliary Disease. R. Upham and M. Hyman, New York.—p. 532.
Cholecystography in Jaundiced Patient. M. Feldman, Baltimore.—p. 537.

The Healing of Peptic Ulcer.—Cash stresses the fact that, regardless of the method of treatment applied in a given case of peptic ulcer, proof of healing or lack of it is essential. Few ulcers are treated in the early stage and the chronic ulcer with the consequent pathologic changes makes healing more difficult and, even when obtained, permits defects to remain that induce recurrence. That peptic ulcer can be healed is a proved fact. Some ulcers heal without treatment. Many can be cured with diet, rest and medication. The prevalence of ulcers that have undergone repeated courses of treatment without improvement or have reactivated after a period of quiescence is evidence of possible weakness in some phase of treatment. Expectancy in the probable rate of healing of an ulcer with or without slough and exudate has no fixed rule. The majority of active ulcers tend to heal readily, especially gastric; also some duodenal ulcers react to treatment with equal facility. Large active chronic ulcers usually react to direct treatment and heal readily, while the small shallow type often persist, and this type is frequently encountered in the chronic ulcer patient who has suffered varied experiences. Delay occurs more often with the ambulatory patient and is apparently due to excess food with resulting increased gastric secretion and traumatism. Proof for this statement is that, when treatment of similar cases is given in bed, healing occurs in normal time. A braid stain, after disappearance of free blood, exudate and even the crater, indicates that either unhealed scar tissue persists or that a turgescent pylorus with probable hypertrophy is present, or that the gallbladder is involved or that a severe form of duodenitis may be the source of the persistent braid stain. Location of the stain in relation to pyloric constriction of the braid and the degree of braid constriction will aid in determining where the pylorus is hypertrophied and persistently spastic. When a positive braid stain is obtained before treatment and both tube returns (the procedure of removing slough, exudate and blood from the crater with the use of a tube with fenestrations which are brought in contact with the lesion by measurement taken from the positive test braid) and the x-ray examination are negative, careful study of the case will be required. A positive test braid alone or with tube returns, following surgical closure of a perforated ulcer, indicates an unhealed condition. Proved healing, if followed by recurrence, aids in deciding the need for surgery. In suspected cancer of the stomach or when ulcers have doubtful cancer features, progressive and proved healing exclude such a possibility. After proved healing of a peptic ulcer, digestive symptoms may continue or more likely recur. Hyperacidity, supersecretion, gastritis, duodenitis, pyloric involvement, chronic appendicitis, cholecystitis, gastric hyperesthesia, disease of the colon, adhesions, chronic partial duodenal obstruction, gastroenteroptosis, poor dietetic hygiene, vicious habits, use of alcohol and tobacco are frequently associated with peptic ulcer and may remain and cause symptoms.

Texas State Journal of Medicine, Fort Worth

35: 521-594 (Dec.) 1939

Roentgen Diagnosis of Small Intestinal Lesions. E. P. Pendergrass, Philadelphia.—p. 528.
Review of 4,000 Consecutive Deliveries in Baylor Outpatient and Hospital Service. C. R. Hannah and F. J. Sebastian, Dallas.—p. 535.
Management of Intractable Pelvic Pain. W. R. Cooke, Galveston.—p. 540.
Danger Points in Thyroid Surgery. A. L. Ridings, Sherman.—p. 544.
Medical Management of Essential Hypertension. J. M. Horn, Fort Worth.—p. 549.
Nature and Practical Value of Complement Fixation Test for Amebiasis. C. F. Craig, San Antonio.—p. 554.
Radical Mastoid Operation: Its Indications and Technic. L. Daily, Houston.—p. 560.
Infected Radicular Cyst of Antrum as Etiologic Factor in Eye Disease. C. P. Schenck, Fort Worth.—p. 567.
Sewage Irrigation. V. M. Ehlers, Austin.—p. 570.

Virginia Medical Monthly, Richmond

66: 707-766 (Dec.) 1939

Treatment of Parkinsonism with Preparation of Belladonna Root: Preliminary Report. R. F. Gayle Jr., Richmond.—p. 707.
Fistulizing Keratitces and Prolapse of Iris Following Imperfect Healing of Incision for Extraction of Cataract. D. B. Kirby, New York.—p. 711.
Many-Sided Problem Presented by Fibroid Tumors. W. L. Peple, Richmond.—p. 716.
Anxiety Neuroses. R. S. Cohen, Washington, D. C.—p. 719.
Euthanasia. W. M. Bowman, Petersburg.—p. 723.
The Premature Infant. W. F. Burdick, Washington, D. C.—p. 729.
Relation of State Hospitals to Outpatient Clinics for Mental Diseases. H. C. Henry, Richmond.—p. 731.
Report of 500 Cases of Varicose Veins: Injection Treatment With and Without Ligation. J. T. N. McCastor and Mary Cousins McCastor, New York.—p. 735.
Paroxysmal Hemoglobinuria: Report of Case in a Child 4 Years Old. J. T. Phillips Jr. and P. Hogg, Newport News.—p. 737.
Jaundice in Typhoid Fever: Case Report. P. Kimmelstiel and N. Bloom, Richmond.—p. 740.
Paget's Disease of Bone in the Field of Otolaryngology. G. B. Trible, Washington, D. C.—p. 742.
The Socialization of Children. J. N. Williams, Richmond.—p. 747.

Yale Journal of Biology and Medicine, New Haven

12: 123-242 (Dec.) 1939

Nathan Smith and Cancer Therapy. A. W. Oughterson, New Haven, Conn.—p. 123.
Growth of Genital Tissues in Response to Estrone as Studied by Colchicine Technic. R. V. Worthington and E. Allen, New Haven, Conn.—p. 137.
Use of Friedman Test for Pregnancy with Chimpanzees. J. H. Elder, Madison, Wis., and J. M. Bruhn, University, Ala.—p. 155.
Experimental Modification of Polarity Potential of Human Eye. W. R. Miles, New Haven, Conn.—p. 161.
Experimental Tuberculosis in Mice: Cellular Response to Chemical Fractions of Tubercle Bacillus. R. M. Thomas and F. I. Dessau, New Haven, Conn.—p. 185.
Vocationalism in the University. H. S. Burr, New Haven, Conn.—p. 199.
Vitamin Deficiencies and Nervous System: Consideration of Contributions of Animal Experimentation. G. R. Cowgill, New Haven, Conn.—p. 205.
Malignant and Nonmalignant Uterine and Vaginal Lesions in Mice Receiving Estrogens and Estrogens and Androgens Simultaneously. W. U. Gardner and E. Allen, New Haven, Conn.—p. 213.
Clinical Use of Stilbestrol, a Synthetic Estrogen: Preliminary Report. R. M. Lewis, New Haven, Conn.—p. 235.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 1073-1126 (Dec. 2) 1939

Treatment of War Fractures by Closed Method. J. Trueta.—p. 1073.
Anesthesia in War Time. R. R. Macintosh and Freda B. Pratt.—p. 1077.
*Relapses After Sulfonamide Cure of Gonorrhea. A. J. Cokkinis and G. L. M. McElligott.—p. 1080.
Medical Research Council Blood Transfusion Outfit, as Provided for Sectors and Depots in London and Home Counties. Janet M. Vaughan.—p. 1084.
Barrel Bandage for Fractures of Jaw. W. K. Fry.—p. 1086.
Hemolytic Streptococcus Epidemic in a Hostel. Nesta H. Wells.—p. 1086.

Relapses After Sulfonamide Treatment of Gonorrhea.—Cokkinis and McElligott find that late relapses of gonorrhea after apparent complete cure with sulfonamide derivatives occur frequently. They studied the records of more than 1,200 male and 200 female patients treated with sulfonamide compounds from six months to two years previously. The analysis reveals an incidence of late relapses sufficient to render unreliable any statistics of results based on a relatively short follow-up. The term "late relapse" is used when symptoms return three weeks or more after a successful sulfonamide course and after at least one negative series of tests. Of the total 1,268 male cases of gonorrhea treated, 263 either failed to respond to the treatment or were not seen again before tests of cure were carried out. Of the remaining 1,005 patients who remained well more than three weeks after their last sulfonamide course and who passed one or more series of tests of cure, 118 (12 per cent) have returned with late relapses (112 with one relapse, five with two and one with three relapses). This 12 per cent is not an accurate estimate of the true relapse rate, as a large number of the 1,005 patients defaulted during the follow-up, and some of these must have relapsed subsequently. The 118 relapses are in the authors' opinion all genuine relapses. Another 100 of the 1,005 patients also returned with gonorrhea in the same period: of these, eighty-seven had definite reinfections, while the other thirteen might have had relapses or reinfections. A special analysis of the material shows that: 1. The incidence of late relapses does not vary with the individual sulfonamide derivatives. 2. There is a fall in both early and late relapses when the chemotherapy is delayed until after the first week of symptoms, definitely so in the sulfanilamide treated group. 3. Adjuvant treatment (vaccine) appears to decrease the relapse rate. 4. Apparent rapid cure does not decrease the incidence of relapse. 5. As patients with relapses are more likely to return at a late stage of the follow-up than unrelapsed ones, it is likely that in actual fact there is a gradual fall in the chance of relapse with the passage of time. 6. Gonococci were present in 81 per cent of late relapses treated in the first two weeks of gonorrhea and in 36 per cent of those treated at a more chronic stage. These figures are based mainly on the results of smear examinations. The use of culture studies may have shown gonococci in many more instances of negative urethral or prostatic smears. 7. The many late relapses throw considerable doubt on the reliability of provocative and other tests of cure in cases treated by chemotherapy. The fact that relapse occurred in 118 of their cases after successful passing of at least one series of tests (seventy-one of them passed two or more) indicates that negative tests are not proofs of cure in cases treated by chemotherapy. And yet the fact that 20 per cent of the late relapses were definitely provoked by vaccine, bougie or alcohol from three to six months after apparent complete cure shows that these tests are still of value but that great caution should be exercised in their interpretation. The authors stress the value of repeated examinations (including culture) of the prostatic secretion, as they believe that many postsulfonamide relapses are started by gonococci in the prostate which were rendered only temporarily inactive. A negative gonococcus complement fixation test does not always mean that a patient is cured. Sixteen of the 210 women with gonorrhea had late relapses. On the whole the figures for them are a little more encouraging than those for the men.

Edinburgh Medical Journal

46: 733-828 (Dec.) 1939

Metabolism of Heart. C. A. L. Evans.—p. 733.
Acute Abdomen in Childhood. Gertrude Herzfeld.—p. 750.
Recent Developments in Surgery of Obstructive Jaundice, with Special Reference to Risk of Hemorrhage. C. F. W. Illingworth.—p. 762.
Cancer and Its Biochemical Factors. M. Copisarow.—p. 781.

Lancet, London

2: 1157-1204 (Dec. 2) 1939

*Vitamin K Lack in Normal and Sick Infants. H. Dam, E. Tage-Hansen and P. Plum.—p. 1157.
*Nutritional Deficiency of Vitamin K in Man. R. Kark and E. L. Lozner.—p. 1162.
Some Fractures of the Skull. J. H. Pringle.—p. 1164.
*Intravenous Injection of Sodium Salts in Sciatica. H. B. Sutton.—p. 1168.
Changes in Stored Blood. A. Macdonald and G. M. Stephen.—p. 1169.
Unilateral Hereditary Deafness. A. B. Smith.—p. 1172.

Lack of Vitamin K in Infants.—Dam and his associates examined the prothrombin in infants suffering from icterus gravis, hemorrhagic state, and anemia, erythroblastosis and hydrops congenitus. In all a pronounced reduction of prothrombin was found. These cases were compared with a number of normal infants with and without "physiologic" icterus neonatorum. The authors summarize their studies as follows: In normal infants a moderate lack of vitamin K develops during the first few days after birth and disappears within a week. This results in a hypoprothrombinemia, which is the cause of the commonly seen slight hemorrhagic diathesis in the newborn. Its cause must be insufficient supply of vitamin K from the intestine. In diseases belonging to the clinical triad of icterus gravis neonatorum, anemia neonatorum and hydrops congenitus, a considerable hypoprothrombinemia has been demonstrated. Ingestion of vitamin K (together with bile salt) by one of the patients resulted in a rapid increase in prothrombin; one may therefore presume that the hypothrombinemia in this case was due to lack of vitamin K. In cases in which a complete lack of prothrombin is seen one day after birth, other causes than insufficient absorption from the intestine must be operating.

Nutritional Deficiency of Vitamin K in Man.—Kark and Lozner report observations on four patients with known deficiency disease of nutritional origin in whom diminished prothrombin levels were incidentally discovered. All four patients had lived alone and had subsisted on diets deficient in fruits and green vegetables. There was no jaundice, but the prothrombin time was found to be prolonged. The patients were each given eight capsules of vitamin K without bile salts by mouth. Each capsule contained 37,500 Dam units. Twenty-four hours after the start of administration of vitamin K the prothrombin time in each case was essentially normal. During the next two days vitamin K was given in the same dosage and after this the prothrombin times were still normal and remained so during the next month, while the patients continued to take the deficient diet without additional vitamin K. Vitamin C therapy was instituted in case 1 after the initial prothrombin observation. Ascorbic acid in a dose of 400 cc. was given daily by mouth, and three days later the vitamin C level of her plasma had risen from 0 to 0.42 mg. per hundred cubic centimeters. At this time a second observation of the prothrombin time was made and this was still greatly prolonged. In cases 2 and 3 treatment with ascorbic acid was not given during the period of observation, and the plasma vitamin C remained at 0. From the foregoing observations it appears that no correlation exists between vitamin C therapy or its level in the plasma and the prothrombin times. The origin of the prothrombin deficiency in these cases cannot be related to biliary obstruction, to biliary fistula or apparently to liver disease. In each case the icteric index, blood fibrinogen and daily urinary urobilinogen were within normal limits. The four cases reported have two noteworthy features: the history of dietary deficiency with the development of scurvy in three and of pellagra and subclinical scurvy in one, and evidence of a prothrombin deficiency which responded to oral vitamin K therapy without bile salts. The evidence seems to point to a

nutritional deficiency of vitamin K as the etiologic basis of the prolonged prothrombin times. None of these patients, however, showed the extreme diminution of prothrombin which has been described in prolonged obstructive jaundice. In view of the fact that the hemorrhagic diathesis associated with prolonged obstructive jaundice develops only when the prothrombin time is considerably longer than in these four cases, it seems doubtful that the prothrombin decrease was the cause of the hemorrhagic manifestations in these cases, for the hemorrhages were classic scurvy and no ascorbic acid was found in the blood plasma. These observations offer further evidence that nutritional deficiency in man is rarely, if ever, confined to a single factor.

Injection of Sodium Salts in Sciatica.—Sutton says that this investigation was instigated by a report which Porter made in 1925. The treatment consists of the administration of both sodium salicylate and sodium iodide in a single solution by intravenous injection. Each injection consisted of 20 cc. of an aqueous solution containing 1 Gm. of sodium salicylate and 1 Gm. of sodium iodide. The solution was prepared as follows: The sodium salts were dissolved in previously sterilized and twice distilled water without warming. The solution was filtered through a Jena glass bowl and put up in 20 cc. sterile ampules, which were quickly sealed, care being taken that the solution did not become too hot. Sterility was further insured by heating to 70 C. for an hour on three consecutive days. The solution is readily decomposed by heat over 80 C. and by light. The ampules were of plain (not colored) glass, so that any subsequent decomposition of the solution would be readily detected. Prepared in this way the solution remains clear for three months or longer. The injections were made slowly with an ordinary 20 cc. record syringe. Any inadvertent injection into the tissues causes great pain, without, however, any subsequent sloughing. The author resorted to this treatment in thirty-two cases of sciatica, of which twenty were primary and twelve secondary. In the twenty cases of primary sciatica, pain ceased usually after about ten minutes. If a second injection was necessary the result was better than that of the first injection. In the twelve cases of secondary sciatica due to some extraneous pathologic condition, pain was diminished but not abolished and a second injection tended to produce less effect than did the first. Any improvement in secondary sciatica is probably due to the analgesic action of the sodium salicylate, but in primary sciatica, in all likelihood "rheumatic," the effect of the sodium salicylate appears to be specific rather than symptomatic. The cases treated this way are too few to justify definite conclusions; nevertheless the intravenous injection of sodium salicylate and sodium iodide does rapidly cure uncomplicated cases of sciatica; on the other hand, its lack of effect on secondary sciatica suggests its value in diagnosis.

Medical Journal of Australia, Sydney

2: 819-852 (Dec. 2) 1939

Thyrotrophic Hormone and Its Relation to Clinical Syndromes. C. G. Lambie.—p. 819.
Osteitis Fibrosa Cystica Generalisata and Parathyroid Tumor. J. F. Hughes.—p. 830.

2: 853-886 (Dec. 9) 1939

Thyrotrophic Hormone and Its Relation to Clinical Syndromes. C. G. Lambie.—p. 853.
The "Acute Appendix." L. H. Ball.—p. 869.

Practitioner, London

143: 573-668 (Dec.) 1939

Diagnostic Importance of Tongue. A. M. Kennedy.—p. 573.
Malignant Disease of Lips and Mouth. E. R. Carling.—p. 584.
Dental Aspects of Disorders of Mouth. A. T. Pitts.—p. 596.
Treatment of Stomatitis. J. Craig.—p. 607.
Disorders of Skin in Neighborhood of Lips and Mouth. P. B. Mumford.—p. 612.
Neuroses of Noncombatants in Time of War. H. Crichton-Miller.—p. 618.
Psychologic Factor in Rheumatic Disease. H. G. McGregor.—p. 627.
Prognosis in Detachment of Retina. S. Philps.—p. 637.
Painless Dissecting Aneurysm of Aorta. J. B. Jessiman.—p. 643.
Psittacosis as Cause of Obscure Fever. F. D. M. Livingstone.—p. 647.
Modern Therapeutics: VI. Iodine and Iodides. H. K. Gaudby.—p. 650.

Archives de Médecine des Enfants, Paris

42: 609-672 (Oct.) 1939

Infantile Pseudoparalysis. L. Babonneix.—p. 609.
Meningeal Manifestations and Cases of Meningitis Caused by Paratyphoid or Eberth's Bacilli. N. Facatselli.—p. 615.
*Complications Following Erythema Nodosum in Children. F. Tissot.—p. 627.

Complications Following Erythema Nodosum in Children.—Tissot calls attention to possible complications following erythema nodosum in children. Visceral tuberculous manifestations, such as serofibrinous pleurisy, perihilar and peritoneal irritation, and lobular and perilobular inflammation, occurred in the majority of the twenty cases observed by the author, nine of serious character. Most of these manifestations occurred in the months following the cutaneous incident. For prophylactic measure the author recommends staying home for from six to eight weeks after the cutaneous eruption. If the patient's condition is satisfactory, living in the country or at medium altitude in a mild protected place is advised.

Presse Médicale, Paris

47: 1517-1532 (Nov. 18-22) 1939

*1262 F. (Diethyl-Amino-Ethoxy-2-Diphenyl) in Treatment of Anginal Syndromes. A. Clerc and J. Sterne.—p. 1517.
Urinary Infection with Pyocyanic Bacilli. L. Strominger.—p. 1519.
Device for Injection of Conserved Blood. Jame and Grimberg.—p. 1521.

Treatment of Anginal Syndromes.—Clerc and Sterne direct attention to a group of chemical substances capable of influencing certain anginal crises. They cite studies on 1262 F, the diethyl-amino-ethoxy-2-diphenyl, in which remarkable efficacy is combined with relatively low toxicity. It unites the antifibrillatory properties of quinic substances and the beneficial effect of theophylline on the coronaries, but it does not have a depressive action on the heart. The diethyl-amino-ethoxy-2-diphenyl is administered by mouth. The individual dose is 0.05 Gm. and the daily dose amounts to from 0.15 to 0.2 Gm. It is well tolerated, even by subjects with severe cardiac and renal changes. It exerts a remarkable influence on the pains of the anginal type. It proved effective in fourteen of nineteen cases of angina pectoris. Its action was especially favorable in the cases of angina pectoris in which severe electrocardiographic changes existed, which indicated coronary involvement. Doubtless the causal lesion is not removed, but its troublesome effects are attenuated or perhaps forestalled. The medication is purely symptomatic and the duration of the influence may vary. Generally the administration of the diethyl-amino-ethoxy-2-diphenyl must be continued for several months; the doses are gradually reduced until they are stabilized at about 0.1 Gm. a day. Three times it was possible to interrupt the treatment without reappearance of the attacks. Some patients were treated in this manner for from six months to a year. Four times, on the other hand, the efficacy became exhausted, after having been highly satisfactory at first; the attack recurred at the end of several weeks. To avoid this, it has been suggested that the treatment be administered in series of increasing and decreasing doses and if possible with interruptions. Even if the medication is continued for more than a year, harmful effects are absent.

Archiv für klinische Chirurgie, Berlin

197: 1-318 (Oct. 12) 1939. Partial Index

Pyloric Hypertrophy of Adults and Antrum Carcinoma. H. Prinz.—p. 1.
Fractures of Capitulum Radii. E. Bürmann.—p. 115.
Synovial Sarco-Endothelioma of the Hip Joint. F. Klages.—p. 137.
Postoperative Hematogenous Peritonitis. L. von Gidró.—p. 147.
Permeability of Intestinal Wall for Bacteria, Especially in Presence of Circulatory Damage to Colon. S. Huruya.—p. 211.
*Experimental Contribution to Epidural and Subdural Hematoma and Therapeutic Value of Dehydration and Repeated Cisternal Puncture. Y. Kabuki.—p. 230.

Epidural and Subdural Hematoma.—Kabuki observed the clinical course and the microscopic appearances of epidural and subdural hematomas which he had produced in dogs for from three to 120 days. The organization of the hematoma of either type takes place from the dural side several days after the operation and is completed in from fourteen to twenty days. Organization of the blood in the case of the subdural hematoma proceeds from the dura alone without the participation of the pia or the arachnoid, whereas in the case of the epidural hematoma in addition to the proliferation from the dura one finds

endothelial cells and various cells proliferating from the bony surface. The author observed the formation of the membrane lined with a thin layer of cells of mesothelial type and considered by many authors to be characteristic for the subdural hematoma, in both the subdural and the epidural variety. Along with the formation of new capillaries, he had observed spaces lined with endothelial cells. These were lined in the early stages with a layer of interlacing fibers but no fibroblasts. The author considered these spaces as blood spaces analogous to formation of new capillaries. Foci of calcification were observed in microscopic preparations from ten to twenty-four days old. Dehydration therapy practiced in one group of these dogs had no effect on the organization of the hematoma. In some of these animals the loss of fluid caused, in addition to shrinking of the brain tissue, alterations suggestive of a beginning degeneration of the ganglionic cells. Organization of the blood began sooner and was completed more promptly in the series in which repeated cisternal punctures were practiced. Among the clinical manifestations the author emphasizes conjunctival hemorrhage, which made its appearance on the first postoperative day, as a rule, and which disappeared by the seventh to tenth day. This symptom had not been previously mentioned. The cerebrospinal fluid showed distinct differences in the two types of hematoma. There was only a mild increase in the cell count, and this soon returned to normal, and no other pathologic observations in the epidural type, while in the subdural the cerebrospinal fluid was distinctly hemorrhagic. Xanthochromia and a positive Nonne-Appelt reaction were present and the increased cell count persisted for as long as two weeks. The animals exhibited clonic spasms, convulsions and pareses of the lower extremity of the corresponding side, as a rule. Secondary bleeding was not unusual and took place, as a rule, between the dura and the hematoma, in one case thirty days after the operation. The organization process of both types of hematoma is typical. It consists of proliferation of spindle-shaped reticulum cells which form interlacing connective tissue fibers.

Monatsschrift für Kinderheilkunde, Berlin

80: 137-272 (Oct. 12) 1939. Partial Index

Pathogenesis and Differential Diagnosis of Pachymeningosis and Leptomeningosis Haemorrhagica Interna. W. Catel.—p. 137.
*Investigations on Calcium and Phosphorus Content of Raw and Heated Breast and Cow's Milk and of Their Ultrafiltrates. L. Weingärtner.—p. 157.
Gonorrheal Polyarthritis in Boy Aged 8 Months as Complication of Blood Transfusion. A. Iancu, C. Oprisiu and N. Domincovici.—p. 166.
Interstitial Nephritis in Scarlet Fever. S. Roufogalis.—p. 174.
Evaluation of Cutaneous Revaccination. D. Gyüre.—p. 197.

Phosphorus Content of Raw and Heated Milk.—Weingärtner points out that Catel had demonstrated in experiments on goats that feeding with heated homogeneous milk results in disturbances in the mineral metabolism. The question arose as to what factors are involved in this metabolic alteration that is produced by heating the milk. Since according to some investigators it is the ultrafiltrable portion of phosphorus and calcium that is absorbed and thus becomes important for the organism, the author decided to investigate whether this portion is reduced by the process of heating. The phosphorus and calcium content were determined in raw and in heated (three minutes at 100 C.) breast and cow's milk. Although it was realized that defatting of the milk involves a slight loss of phosphorus and calcium, the determinations were made on defatted milk in order to prevent a possible undesirable lipolysis and a stopping up of the filters with fat. The author found that the phosphorus content of the raw and heated cow's milk is approximately the same but that in heated breast milk it is 28 per cent lower than in raw breast milk. The decrease of phosphorus in the ultrafiltrate of heated breast milk in comparison with the phosphorus content of the ultrafiltrate of raw breast milk was 40.5 per cent. The decrease of phosphorus in the corresponding ultrafiltrate of cow's milk amounts to only 1.4 per cent. It is probable that the considerable decrease in the phosphorus content of the ultrafiltrate of heated breast milk is due to the fact that by the sterilization (heating) acid-soluble organic phosphorus is transformed into complex compounds and that a portion of the acid-soluble anorganic, ultrafiltrable phosphorus is transformed into colloidal compounds which do not pass the filter. The calcium content of heated breast milk is reduced 19.3 per cent in comparison to that of raw breast milk. The decrease of calcium in the ultrafiltrate of heated in comparison to the calcium content of the ultrafiltrate of raw breast milk is only 0.84 per cent. The corresponding decreases in cow's milk amount to 0.5 and 0.4, respectively. The author concludes that the results of these investigations make understandable the disturbances in the mineral metabolism of prematurely born infants who are fed with sterilized breast milk.

Geneeskundig Tijdschr. v. Nederl.-Indië, Batavia

79: 2825-2888 (Nov. 7) 1939

Evaluation of Data Obtained in Studies on Diets. II. Feeding Norms. I. H. G. Koefoed, S. Postmus and A. G. van Veen.—p. 2826.
*Frequency of Acute Appendicitis in Netherland East Indies. A. Fossen and H. E. Boeke.—p. 2857.
Frequent Occurrence of a Type of Trichostrongylus, Probably Trichostrongylus Colubriformis, in Intestine of Javanese. C. Bonne and L. K. Joe.—p. 2868.
Anthropologic Value of Fingerprints. J. Dankmeijer and R. C. Renes.—p. 2873.

Acute Appendicitis in Netherland East Indies.—Fossen and Boeke state that, from the first of March 1934 to the first of March 1939, 175 patients were treated for acute appendicitis in the Central Civil Hospital in Batavia. These 175 patients with appendicitis were observed among 13,000 patients; that is, the appendicitis cases amounted to 1.3 per cent of the total number. Among the 13,000 patients there were about 1,600 Europeans, 2,400 Chinese and 9,000 natives. The number of cases of appendicitis for these three racial groups were seventy-two, fifty and fifty-three, respectively. Thus the incidence of appendicitis among the Europeans was 4.5 per cent, among Chinese 2 per cent and among the natives only 0.6 per cent. However, the authors point out that anatomic pathologic studies on appendixes of the different racial stocks have revealed that signs of inflammation occur in a large percentage of the appendixes of natives as well as of Chinese; in fact, their morbidity is even higher than that of Europeans. Thus it seems that appendicitis is as frequent in the East Indies as in Europe, but it causes clinical manifestation much less frequently there than in Europe. Of the seventy-two Europeans who had appendicitis, forty-two were men and thirty were women; among the fifty Chinese, forty-five were men and five were women, and of the fifty-three natives, forty-eight were men and five were women. Thus among the natives and Chinese appendicitis is much less frequent in women than in men. Analyzing their cases according to age groups, the authors found that the incidence of appendicitis is highest in the age group between 20 and 30.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 5447-5522 (Nov. 18) 1939

Herpes Corneae and Some Herpetiform Disorders of the Cornea. J. Goedhloed.—p. 5448.
Disturbances of Neurosympathetic Regulation. W. Smith.—p. 5456.
Encephalopathy Caused by Manganese. F. Grewel and E. Sassen.—p. 5464.
*Poisoning by Oil of Chenopodium. J. van Lookeren Campagne.—p. 5472.

Poisoning by Oil of Chenopodium.—Van Lookeren Campagne cites four cases of poisoning with chenopodium oil, all of which had a fatal outcome. In none of these cases had the anthelmintic been given on medical prescription. The author regards it as necessary that so dangerous a drug as chenopodium oil should be obtainable only on medical prescription and that great caution should be observed in its administration.

83: 5523-5614 (Nov. 25) 1939. Partial Index

Contracted Pelvis in Practice. P. C. T. van der Hoeven.—p. 5524.
*Influence of Salygran on Volume of Blood. E. Lopes Cardozo.—p. 5528.
Physical Chemistry of Blood During Hypnotic Condition. A. Naerebout and B. Stokvis.—p. 5532.
Syndrome of Guillain-Barré (Polyradiculoneuritis with Albuminocytologic Dissociation). M. Hommes.—p. 5540.
Coccidioidomycosis. N. van der Walle.—p. 5548.

Influence of Salyrgan on Volume of Blood.—Lopes Cardozo made studies on patients with heart disease who, in spite of optimal treatment with digitalis, still had severe edema. He determined the volume of plasma by means of the blue dyestuff T 1824 before the onset of the salyrgan treatment and after the edemas had disappeared, which required as a rule from seven to ten days, during which time the weight decreased by from 10 to 20 Kg. The author records observations on eight patients.

He found that salyrgan treatment causes a reduction in the volume of blood. The diminution in the volume of plasma is accompanied by an almost parallel reduction in erythrocytes, so that the relative cell volume shows a tendency to remain normal. Even during salyrgan diuresis a gradually progressive reduction of the plasma volume has been observed. Probably this is in part responsible for the drop of the urea clearance that has been found during and shortly after salyrgan diuresis.

Acta Pædiatrica, Stockholm

20: 1-507 (Comp. Vol.) 1939. Partial Index

Ten Years' Experience of BCG Vaccination at Gothenburg. H. Anderson and H. Belfrage.—p. 1.
A Few Words About So-Called Positive Anergy. G. Anzén.—p. 12.
Treatment of Pneumonia in Early Infancy. C. Friderichsen.—p. 167.
*Acute Polyarthritis as Initial Symptom of Primary Tuberculous Infection. J. Heimbeck.—p. 206.
Remarks on Physiologic Red Blood Picture During First Year of Life. Y. Åkerrén.—p. 302.

Acute Polyarthritis as Symptom of Tuberculosis.—Heimbeck reports the case of a woman aged 21 with tuberculous anamnesis in the father's family. The patient had been in good health until the sudden development of pain in the knees, left elbow, right hip and finger joints. The ankles, like the fingers, were swollen but not painful. Examination disclosed no abnormalities in the body, urine or temperature. Pirquet's test was tuberculin negative after forty-eight hours. Initial therapy before hospitalization consisted of rest and doses of acetylsalicylic acid. The pathoiogic condition evolved through an alternation of varying articular pains and their subsidence, in weekly intervals, with the sedimentation rate fluctuating accordingly. Another tuberculin test made six weeks after the initial appearance of the symptoms resulted in a maximal tuberculin positive reaction with vesicles. A roentgenogram taken on the same day failed to disclose the existence of a tuberculous lesion. The patient was kept in bed and managed with a combined arsenic and acetylsalicylic acid therapy. After a month (ten weeks after the appearance of the initial symptoms) a roentgenogram disclosed a clearly delimited compact infiltration the size of a small pea in the second intercostal space. A roentgenogram repeated two weeks later disclosed a right pleural effusion with no change in the infiltration. A further examination two months subsequently disclosed a diminution of the pleural effusion and incipient cicatrization of the pulmonary lesion. Control observations made about three and one-half months after this showed a physically normal condition and a pulmonary abnormality scarcely traceable in the roentgenogram. At no time were coughing and expectoration noted. The author regards the case as one of primary tuberculosis so recent in origin that neither the tuberculin test nor the roentgenogram indicated any abnormality until the infection had developed sufficiently. The diagnostic picture proceeded from a complete tuberculin anergy and negative x-ray evidence to a condition of maximal allergy within six weeks, with x-ray determination of the tuberculous focus as late as four weeks after this. Nonspecific articular abnormalities are not rare phenomena of tuberculous toxicity and have been variously interpreted in the literature. The new feature, according to the author, in this case is the appearance of initial articular symptoms in tuberculosis of a primary character. He thinks that specific primary toxins of tubercle bacilli may well exist in the absence of a tuberculin positive reaction. Experience with BCG vaccine therapy indicated to him that gross abscesses can exist months before cutaneous allergy can be demonstrated.

Acta Radiologica, Stockholm

20: 417-520 (Nov. 15) 1939. Partial Index

Contribution to Knowledge of Primary Duodenal Cancer. Asta Bergendal.—p. 417.
*Insertion Pains Roentgenologically Diagnosed and Treated. S. Mustakallio and H. Laitinen.—p. 427.
Roentgenologic Examination of Acute Abdominal Lesions. J. Frimann-Dahl.—p. 438.
Deglutition Anomaly Simulating Hypopharyngeal Cancer. S. Welin.—p. 452.
Arteriographic Diagnosis of Malignant Glioma. H. Hemmingson.—p. 499.

Roentgen Therapy in Insertion Pains.—Mustakallio and Laitinen report excellent results obtained by roentgen treatments in forty-seven cases of rheumatic disorders at the insertion site, chiefly epicondylitis (twenty-one cases) and calcaneitis (twenty-one cases). The average age levels for both men and women in epicondylitis were 44.8 and for calcaneitis 32.4. The average duration of illness before treatment was respectively six and seven months. All the cases of epicondylitis, with the exception of two, were lateral. Calcaneitis affected chiefly persons with flatfoot abnormality. Symptoms of epicondylitis consisted of actual pains, sensitivity to pressure, local swelling and pain on exertion, while patients with calcaneitis suffered pain in the standing or walking position. Both conditions caused partial incapacity for work. X-ray examination disclosed modifications consisting of small atrophic spots on the surface of the bone at the insertion site which gradually acquired uneven contours and showed small osseous spurs projecting in the direction of the tendon. Calcification in the vicinity of the insertion site was less frequent and apparently when it did occur was found in the tendon. In several cases x-ray examination showed that not only the bone at the insertion site but also the tendon terminating at the insertion site was affected, clear evidence of periosteotendinitis. X-ray examination of the heel bone disclosed periosteal changes consisting of spur formations at the tuber calcanei, which were manifestly of earlier origin, and of small atrophic spots such as rarely appear in normal conditions. Treatment consisted of single skin doses of from 100 to 150 roentgens applied twice at intervals of one or several days and was repeated, if necessary, every two weeks. Most cases promptly yielded to the first series of treatments and did not require further application. The patients were able to resume work after a few days. Subsequent inquiries extending over six months to six years, to which thirty persons responded, disclosed twenty-three cures (ten of the patients having been ill six months or longer before treatment), four improvements enabling work resumption, two relapses and one failure. According to the authors, insertion diseases merit greater attention because of the economic loss involved in inability to work. They stress the advantage of roentgen therapy over surgical intervention in painlessness, gain of time and economic saving. Operation consists of making a small incision in the insertion tendon of the lateral epicondyle and through immobilization effecting a cure, the procedure requiring about ten days.

Ugeskrift for Læger, Copenhagen

101: 1301-1330 (Nov. 9) 1939

Mortality in Croupous Pneumonia. J. Møller.—p. 1301.
*Spondylarthritis Ankylopoietica: Remarks Concerning Early Diagnosis. N. Lassen.—p. 1307.
Spontaneous Hyperventilation Tetany: Description of Two Cases with Examination of Content of Calcium and Ionized Calcium in Blood Serum Outside of and During Attacks. P. Schultzer and H. Lebel.—p. 1312.

Spondylarthritis Ankylopoietica.—Lassen says that this disorder, which occurs chiefly in men, is now considered rheumatic. In spite of definite symptoms it is often not recognized until fairly late. There are inflammatory changes in the periarticular connective tissue with growth of connective tissue into the small joints of the spinal column, with secondary calcifications after connective tissue ankylosis for a longer time. Corresponding changes take place in the sacro-iliac articulation. X-ray changes in the spinal column cannot be established until after three to five years, but changes in the sacro-iliac articulation are demonstrable in about a year. By x-ray examination of this articulation diagnosis can be made so early that an effective therapy can be introduced. Treatment consists of long continued physical therapy, warm baths of different kinds with light treatment and other strengthening and stimulating treatment, together with rest and massage. Under proper treatment the patient is able to work in spite of considerable ankylosis of the back, if greater deformities under development of the ankylosis can be prevented. The author reports that of seventeen patients (sixteen men, one woman) with spondylarthritis ankylopoietica treated in the last four years all but one admitted under various other diagnosis, physical therapy as indicated resulted in improvement in the ten. In six the symptoms had set in before the age of 20, in only one as late as at about 40. The average duration before diagnosis was about six years. In all cases there was pain in the legs, hips, loins and back and stiffness of the back; in six there was considerable anemia. The sedimentation reaction was pathologically increased in all cases. The general condition was affected in eleven.